CHAPTER 5

THE SHIP'S LAUNDRY

One of the supply officer's responsibilities is to provide laundry service to the ship's crew. This is done through the operation of the ship's laundry which is operated by Ship's Servicemen. The laundry service provided is directly in line with the overall mission of the Navy. This service provides shipboard personnel with living and working conditions that will result in a high state of crew morale, health and comfort, adequate to sustain maximum personnel effectiveness, and to support an increase in personnel retention.

The ship's laundry works on a workflow concept; that is, laundry is routed through one work station to another until it is completed. The main purpose of this workflow is to obtain efficient production. As a Ship's Serviceman working in the laundry, you need to become familiar with the different tasks that make up this laundry workflow.

This chapter provides working personnel in the ship's laundry with information and facts concerning the operation of the laundry. It also covers the tasks involved in processing laundry from the receipt of bundles or bulk work through the assembly and issue of the finished work to the individual or division.

SAFETY

Safety is discussed throughout this chapter and is a very important aspect of the laundry process. Safety cannot be overemphasized. The safety precautions for shipboard laundries are contained in *Navy Safety Precautions Afloat,* OPNAVINST 5100.19A, chapter 13, section 2. The laundry supervisor is responsible for making sure all laundry personnel have safe work practices. Technical manuals for each piece of equipment list the safety precautions and safety features for that equipment. A list of safety precautions for each piece of equipment should be posted near the machine for all laundry personnel to read, remember, and practice.

SANITATION

The purpose of the ship's laundry is to produce clean clothing through the laundry process. This washing process should be done in a sanitary manner. The medical officer or senior Hospital Corpsman aboard should inspect the laundry frequently to make sure laundry spaces are kept in a sanitary condition as outlined in the *Manual of Naval Preventive Medicine,* NAVMED P-5010, chapter 2.

The senior medical officer aboard ship prepares the sanitation requirements. If a medical officer is not attached aboard ship, the senior Hospital Corpsman aboard prepares the sanitation requirements. These sanitation requirements are posted in the laundry for all laundry personnel to read and rigidly endorse. The ship's store officer should inspect the laundry each business day to make sure sanitation regulations are complied with.

CHARGES FOR LAUNDRY SERVICE

Normally laundry service aboard ship is free. The materials used in processing laundry are paid for through the profits made by the ship's store. In certain cases these profits, generated through the ship's store, may not be sufficient enough to cover the cost of the supplies necessary to operate the laundry and the commanding officer may authorized the collection of the following charges on a monthly basis:

- Officers $1.25
- Midshipmen and chief petty officers .75
- Other enlisted personnel .35

These charges will also cover the cost of operating supplies for the barbershop and the dry-cleaning plant.

Charges are also made for laundry service provided for the sick bay when the charges exceed $25 per month. Charges are based on services

costing 1 cent per pound of laundry. Records should be kept if the amount of work received from sick bay monthly is in excess of $25. Laundry services in excess of $25 are charged to the ship's OPTAR.

LAUNDRY PERSONNEL

Personnel preassigned to the laundry from the Ship's Serviceman complement. The allowance of rated personnel is based on the assumption that an additional number of nonrated personnel will be required in order to operate the laundry efficiently. These additional personnel, unless detailed for a specified time (3 months or less), are classified as strikers for the Ship's Serviceman rating.

The organization of a ship's laundry varies with the size of a ship. A small ship, for example, may have a Ship's Serviceman 2 in charge of the laundry and two Ship's Servicemen 3 assigned as laundry personnel. These three persons receive, wash, and issue finished laundry. They do everything necessary in the laundry. A large ship, on the other hand, has a much larger laundry operation. A new Navy carrier may have as many as 50 Ship's Servicemen working in the laundry. A guide for determining the number of personnel required to perform the laundry function is 1 laundryman for every 75 to 100 crew members.

Figure 5-1 illustrates the organization of a shipboard laundry on a carrier. This chart gives you a basic idea how duties and responsibilities are administered in the laundry. In a large laundry such as this, each section has its own personnel, although individuals might be moved from one section to another from time to time to accommodate the workload or to provide training and experience. In a small laundry, all these functions are performed with fewer personnel and less working space. The result is likely to be a simpler organization chart, with each person performing a variety of tasks.

LAUNDRY SUPERVISOR

On a small ship, the Ship's Serviceman in charge of the laundry is responsible to the immediate superior for the complete operations. There may be no experienced laundry officer available to provide guidance. On a large ship, the ship's store officer may operate the laundry under the supervision of the supply officer or the supply officer may have an assistant supply officer in charge of the services branch who operates the laundry under the supply officer's direction. In either instance, the supervisor of the laundry has a position comparable to that of a civilian manager of a Navy shore laundry. Responsibilities are many and varied according to the size of the laundry supervised.

The Ship's Serviceman supervising the laundry orders supplies; sees that the laundry is kept clean and that the equipment is properly maintained; assigns and trains laundry personnel; maintains the flow of work through the laundry, maintains the standard of quality required on the ship; and does

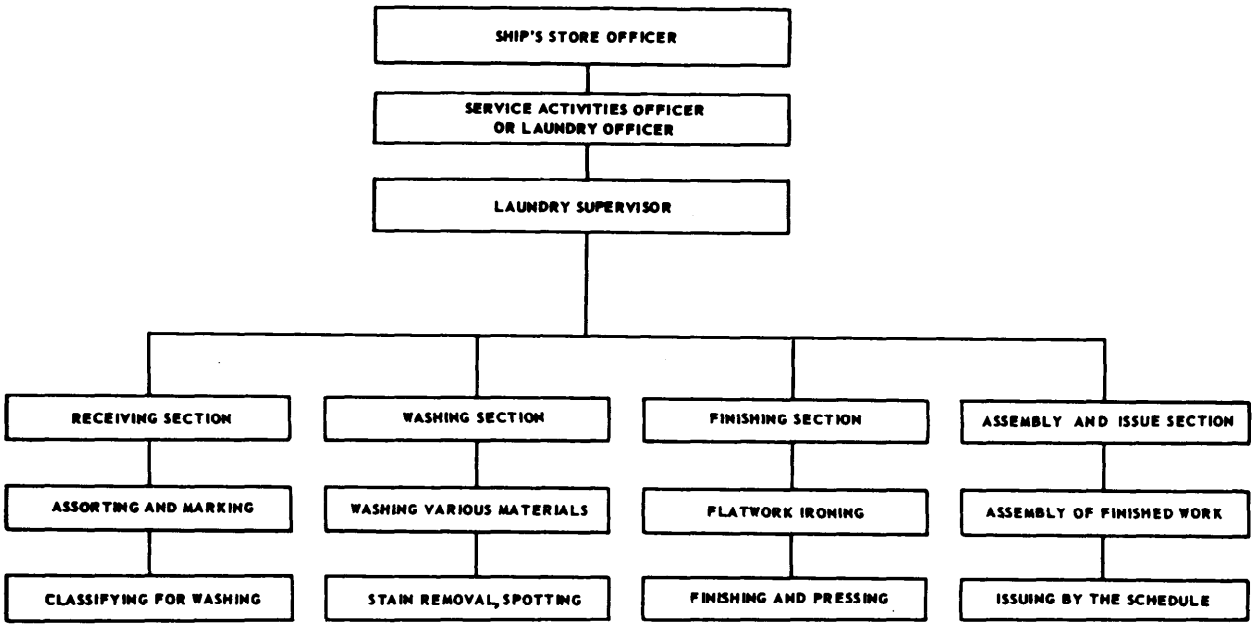


Figure 5-1.—Laundry organization chart on a large ship.

whatever is necessary to make the operation efficient.

OTHER LAUNDRY PERSONNEL

Other laundry personnel are responsible to the supervisor for completing their assigned tasks. They should be ready to pick up any slack that may occur from a shortage in personnel.

Laundry personnel should also avoid safety violations and use all equipment properly and according to manufacturers' instructions. Throughout this chapter the importance of operating equipment properly is stressed along with the consequences of operating equipment improperly. Repeatedly the following facts emerge:

- Laundry equipment will not perform efficiently unless operated correctly, and if operated incorrectly, it is easily damaged.
- Replacements are expensive and not always easily available.
- An efficiently operating laundry is vital to the welfare and morale of the ship's company.
- The articles being laundered are valuable and often not easily replaced if damaged or destroyed.
- Faulty or careless operation can easily injure operating personnel.

LAUNDRY LOGS

To keep track of laundry operations there are certain logs you need to maintain. As a Ship's Serviceman third class, you should become familiar with the following logs:

- Bulk work log
- Press deck log
- Equipment maintenance log
- Heat stress log

These logs are used to log laundry in and out, record maintenance data on equipment, and record temperatures in the laundry. The logs are maintained on a daily basis and should be readily available for any inspecting personnel. The ship's store officer reviews these logs weekly and initials them after review.

BULK WORK AND PRESS DECK LOGS

Your bulk work and press deck logs are shown in figure 5-2. As the receiving laundryman, you

LAUNDRY BULK WORK LOG

DATE 27 Oct 19__

DIV/DEPT	NO. OF BAGS	WHITES (WEIGHT)	DUNGAREE (WEIGHT)	OTHER (WEIGHT)	RECEIVED BY: (SIGNATURE LPO)	DELIVERED BY: (SIGNATURE DLPO)	CHECKED OUT BY (SIGNATURE LPO)	RECEIVED BY: (SIGNATURE DLPO)	DATE	REMARKS/COMMENTS
"A"	4		260	40	P.M. Rudowski	J. Darwin	P.M. Rudowski	J. Darwin	2/28	Dungarees Issued
ENGINEERING	2		110	45	P.M. Rudowski	A. Jones	P.M. Rudowski	A. Jones	2/28	
Deck	3	65	123	55	P.M. Rudowski	B. Barnes	P.M. Rudowski	B. Barnes	2/28	Whites Issued

Abbreviations:
LPO - Laundry Petty Officer
DLPO - Division Laundry Petty Officer

PRESS DECK LOG (OFFICERS AND CPO)

DATE 28 Oct 19__

NAME	LAUNDRY MARK	NO. OF SHIRTS	NO. OF TROUSERS	OTHER	WEIGHT	RECEIVED AND CHECKED BY: (SIGNATURE LPO)	DELIVERED BY: (SIGNATURE)	CHECKED OUT BY: (SIGNATURE LPO)	RECEIVED BY: (SIGNATURE)	DATE	REMARKS/COMMENTS
Smith A	S 1234	2	3		4 lb.	P.M. Rudowski	J. Baker	P.M. Rudowski	J. Baker	10/29	
Barhart SG	3259	1	2		3 lb.	P.M. Rudowski	J. Darwin	P.M. Rudowski	B. Barnes	10/29	

A SEPARATE PRESS DECK LOG SHOULD BE MAINTAINED FOR OTHER PRESS MATERIAL AND SHOULD INCLUDE COLUMNS FOR:

NUMBER OF SHIRTS
NUMBER OF JACKETS
NUMBER OF TROUSERS
NUMBER OF NAPKINS
NUMBER OF TABLECLOTHS
OTHER

Abbreviations:
LPO - Laundry Petty Officer
DLPO - Division Laundry Petty Officer

Figure 5-2.—Laundry bulk work and press deck logs.

should make sure all laundry is carefully logged in. As you study figure 5-2, notice the columns for the bulk log: (1) division or department, (2) number of bags received, (3) weight in whites or dungarees, and (4) another column for miscellaneous items. There are also signature columns for the receiving laundry man and divisional laundry petty officer to check laundry in and out and a column for any additional remarks.

Your press deck log consists of a record of individual officer and chief petty officer lots received in the laundry. As you study figure 5-2, notice the columns for the press deck log.

Under the column marked Other you normally list items other than shirts or trousers. If space does not permit listing these items, you should keep a separate press deck log as indicated in figure 5-2.

At the end of each week, the press deck and bulk work logs are summarized on a locally prepared laundry summary sheet by the laundry supervisor. This summary sheet is routed to the supply officer for review and signature. A copy of the summary sheet should be filed in the laundry for later reference.

EQUIPMENT MAINTENANCE LOG

The equipment maintenance log is shown in figure 5-3. This log is maintained for the purpose of recording historical repair data. A separate log sheet should be kept on each piece of laundry equipment you have aboard your ship.

HEAT STRESS LOG

The heat stress log shown in figure 5-4 is used for the purpose of checking temperatures in the laundry. Temperature readings are taken once every 4 hours and logged in. The number of readings you take depends on how many hours the laundry operates; however, readings will be taken whenever the laundry is manned. If laundry work continues into the night, the log will include each additional 4-hour period.

HEAT STRESS

Heat stress is a very dangerous element in the shipboard laundry. It is a combination of air temperature, thermal radiation, humidity, airflow, and workload that may stress the body as it tries to regulate body temperature. The condition of heat stress can readily cause fatigue, severe headaches, nausea, and poor physical and mental performance. As the temperature of your body continues to increase due to exposure to high heat, you run the risk of having heat exhaustion or a heatstroke.

Listed below are some of the factors that reduce the chances of heat injuries from high temperatures in the laundry.

- Recording temperatures in the heat stress log each 4-hour period
- Inspecting the laundry for conditions that would cause higher heat
- Reporting all temperatures 100° or over as required
- Following the do's and don'ts list included in this chapter

The requirements of the Navy's heat stress program are included in OPNAVINST 5100.20, *Shipboard Heat Stress Control and Personnel Protection.* A hanging dry bulb thermometer should be permanently mounted near the wash and press deck. It should be mounted in such a manner that the bulb of the thermometer is not influenced by adjacent or local heat sources. You should record the temperature readings in the heat stress log using these dry bulb thermometers once every 4 hours. When temperatures are 100°F or more, you should do the following:

- Log the temperature reading and circle it in the heat stress log.
- Notify the ship's store officer and medical officer.
- Leave the laundry until a heat stress survey is done by the medical officer.

You should remain out of the laundry until further directed on what to do by the medical officer. If the temperature remains high, you will only be able to work certain periods in the laundry. These periods are better known as stay times. These stay times are determined by the medical officer and are always followed by a recovery period where the laundry personnel will go to a cool dry place to allow their body temperature to return to normal. The stay time is always half of the recovery time. The recovery period never exceeds 4 hours provided there is no evidence of cumulative fatigue.

LAUNDRY EQUIPMENT MAINTENANCE LOG

EQUIPMENT (SPECIFY) WASHER/EXTRACTOR, 60 POUND

DATE OUT OF COMMISSION	DATE PLACED IN COMMISSION	AMOUNT OF DOWN TIME (HOURS)	REASON DOWN	PARTS REPLACED	REMARKS/COMMENTS
2/27/88	2/27	4	OVERLOAD RELAY CUTS OUT	OVERLOAD HEATERS	REPLACED WITH NEXT SIZE HIGHER
3/4/88	3/4	2	LOAD CYLINDER DOOR LATCH	LATCH AND BOLTS	
3/5/88	3/7	36	DEFECTIVE DRAIN SOLENOID	DRAIN SOLENOID	

MAINTAIN SEPARATE LOG FOR EACH PIECE OF LAUNDRY EQUIPMENT INSTALLED (WASHER, EXTRACTOR, PRESS, TUMBLER, ETC.)

Figure 5-3.—Laundry equipment maintenance log.

DATE OF READING	TIME OF READING	PRESS DECK	WASH DECK	REMARKS
10-5-__	0800	96	87	
10-5-__	1200	(102)	98	Ship's Store officer, medical officer notified
10-5-__	1600	93	88	Laundry secured at 1600
10-6-__	N/A	N/A	N/A	Laundry closed
10-7-__	N/A	N/A	N/A	Laundry closed
10-8-__	0800	92	81	
10-8-__	1200	96	87	

Figure 5-4.-Laundry heat stress log.

Personnel working in a heat stress environment should follow the do's and don'ts listed below:

- Do eat three adequate meals a day.
- Do drink plenty of cool water.
- Do get at least 6 hours of continuous sleep per 24-hour period.
- Do wear clean clothing composed of at least 35 percent cotton.
- Do not take salt tablets.

- Do not wear starched clothing.

- Do not drink commercially prepared liquid electrolyte supplements instead of water.

Past inspections conducted aboard various ships have identified many of the principal problems that may cause a heat stress environment. Some of these problems were so severe that personnel exposures had to be limited to avoid harm. These heat stress conditions are caused by the following:

- Steam and water leaks

- Missing or deteriorated insulation on steam piping, valves, and machinery

- Ventilation system deficiencies, such as missing or mutilated ductwork, misdirected terminals, clogged exhaust screens, closed or partially closed Circle William dampers, dirty ventilation ducting, and inoperative fan motors and controllers

- Ventilation design deficiencies, resulting in less than adequate supply or exhaust air capacity and/or distribution

Even though the above conditions are identified and corrective action taken, there may still be instances where a heat stress situation may occur. Some examples include ship operations in hot and humid climates, performance of hard physical tasks, and so forth. While working in the laundry, you should be aware of conditions that may cause a heat stress condition and report all problems to the laundry supervisor so corrective action can be taken.

LAUNDRY SECURITY

Security of the laundry is the responsibility of all laundry personnel. You must take proper security measures to protect the laundry from loss of personal clothing, damage to equipment, loss of supplies, and unauthorized use.

The ship's laundry is a group IV space, and the keys to the laundry should be handled as outlined in chapter 1 of this manual. The ship's laundry should not be used after working hours except when final approval is obtained from the ship's store officer. The laundry should never be used by unauthorized personnel. Use of the laundry by unauthorized personnel can cause a variety of problems including the following:

- Possible laundry fires due to not following safety precautions and lack of training

- Damage to equipment due to operating incorrectly

- Injury to unauthorized users due to lack of knowledge of safety devices on equipment and safety precautions in the laundry

- Loss of personal clothing or supplies due to theft

A laundry fire can cause thousands of dollars in damage. Damage to equipment can run into loss of production capabilities and longer working hours for all laundry personnel. Injury to unauthorized users could range from burning a hand on a press to heat injuries due to heat stress.

STOWAGE AND HANDLING OF LAUNDRY SUPPLIES

Standard stock laundry chemicals are requisitioned from supply activities ashore. These laundry supplies are used in conjunction with the Navy wash formula to launder clothing. Laundry personnel should be familiar with the proper handling and stowage of all laundry supplies especially the supplies used in the wash cycle. See figure 5-5.

The proper stowage and handling of supplies is essential in order to prevent health and safety hazards. Stowage space aboard ship is normally limited, and some planning is required to make sure space is used efficiently. Laundry chemicals must be stowed in a bulk storeroom. Chemical supplies in the laundry should be limited to those amounts needed for a 1-week period. Heavy laundry supplies should be stowed close to the laundry and small items kept in bins to prevent loss. Items such as pins, laundry net bags, or other pilferable items should be kept under lock and key. Rust remover or stain removal supplies should be stored in a cool, dry space. Within the laundry, chemicals should be stowed in a metal bin using bin liners or plastic bags. The sequence of stowage in this metal bin should be two-shot detergent, laundry sour, and starch.

TWO—SHOT DETERGENT	NSN NOT AVAILABLE	40 lb
SOUR	7930-00-205-2882	50 lb
STARCH	7930-00-841-6362	25 lb

Figure 5-5.—Most common laundry supplies.

HANDLING TWO-SHOT DETERGENT

NAVRESSO recently introduced a new two-shot detergent for use in shipboard laundries. It is called two-shot detergent because it not only includes the detergent it also includes an oxygen bleach. It does all the work that the alkali, type I detergent, type II detergent, nonionic liquid, and powdered bleach did before. Since the amount of chemicals is greatly reduced, you can expect a savings of storage space of about 63 percent. The two-shot detergent comes in a destructproof container and needs to be stored in a cool space. Since it weighs only 40 pounds, it eliminates the problem of handling very heavy laundry supplies. This product is also granular and is nondusting and, therefore, will not disperse into the air. The detergent may contain cakes or lumps which are not readily broken up by hand. Keep the two-shot detergent properly covered to prevent cakes and lumps from forming.

HANDLING LAUNDRY SOUR

Laundry sour is a blue powder received in 50-pound drums. Since sour is used sparingly, you will use about 40 pounds of sour per 100 personnel over a 3-month period. Like most powdered substances, it needs to be covered and stored in a cool, dry space to prevent it from becoming hard and unusable.

Sour may be injurious to you if it comes in contact with your eyes, skin, or if it is swallowed. For skin contact flush with water. For contact with your eyes or if swallowed contact medical personnel. Eye contact requires flushing your eyes with water for 15 minutes.

HANDLING STARCH

Laundry starch is manufactured from corn or wheat or a combination of both. It is considered the safest product used in the laundry. Starch normally comes in boxes or bags, and heavy items should not be stowed on top of it. Always stow it in a cool and dry space. When starch comes in contact with moisture or water it becomes cakey and cannot be used.

DISPOSAL AND ENVIRONMENTAL PROTECTION

The *Environmental Protection Manual,* OPNAVINST 5090.1, issues Navy policy and assigns responsibilities for Navywide actions for control of environmental protection. Commanding officers should coordinate and cooperate with federal, state, interstate, and local pollution control agencies, and follow all standards and regulations in regard to control of environmental pollution.

As a Ship's Serviceman, you should be aware of practices or things that may affect the environment. The water that drains from the laundry is considered waste water and is transported to the collection, holding, and transfer (CHT) tanks. CHT tanks are installed aboard ship for the purpose of handling waste water from showers, heads, laundries, galleys, sculleries, and sinks and is transported by the ship's waste drain system. In port the waste water is transferred ashore for disposal. Underway, the ship should not be within 50 miles of any shoreline to discharge this waste.

Before you dispose of any laundry chemicals in port or at sea, you should first consider whether it is a hazardous substance. A hazardous substance may be defined as any substance or mixture of substances that is toxic, corrosive, irritating, flammable, a strong oxidizer, a strong sanitizer, or that generates pressure through decomposition, heat, or other means. Hazard classifications and stowage requirements for shipboard consumables are contained in NAVSUP Publication 4500, *Consolidated Hazardous Item List* (CHIL), now known as the *Hazardous Materials Information System* (HMIS) list. Information on the disposal of hazardous substance is included in section A of this publication. Section A includes a disposal code for each item listed and explains procedures for disposal of that particular substance.

LAUNDRY SCHEDULES

The laundry supervisor prepares the laundry schedule for approval by his or her immediate

supervisor. As a Ship's Serviceman third class, you should be familiar with factors that determine not only the laundry schedule but how many hours the laundry will be operating. These factors include the following:

- Amount of work that must be processed weekly
- Capacity of laundry equipment
- Number and competence of laundry crew

These factors listed may be overwhelming at times. To eliminate problems and establish normal working hours for personnel, a laundry is generally operated in shifts.

A laundry shift normally lasts 8 hours. Your laundry may operate one, two, or three shifts per day. Each shift must have experienced Ship's Servicemen to handle each shift so work turned out is satisfactory. A shortage of experienced personnel will require strikers to assist SH personnel. Strikers should not be allowed to operate equipment until they are qualified in using that equipment.

PROCESSING LAUNDRY

The first step to processing laundry is receiving the different lots into the laundry, marking them, and classifying them. Articles to be laundered are delivered to the ship's laundry either in bulk lots or in individual bundles. Bulk lots include division laundry (crews' personal clothing and linen), flatwork (towels, linen, and tablecloths from staterooms, officer and CPO messes, and sick bay), and service lots (clothing of cooks and foodservice attendants, barbers, hospital personnel, and snack bar personnel).

The workflow for individual and bulk lots is shown in figure 5-6. The solid black line running from the Bulk Lots block, top left, to the Issuing block at the bottom shows the steps in processing bulk laundry. The broken line on the right side of the chart connects all types of work accomplished on individual lots.

The receiving laundry personnel are responsible for receiving, marking, and classifying all lots delivered to the laundry.

To perform these duties, the receiver should have a list of divisional laundry petty officers. The laundry supervisor provides the receiver with this list in case there is a need to contact a division representative regarding delivery and pickup of laundry or to resolve problems. Meetings are normally held periodically by the laundry supervisor to inform divisional laundry petty officers of any changes that may occur in laundry policy.

RECEIVING BULK LOTS

When receiving bulk lots, the receiving laundry personnel should consider the many problems that may be encountered when identifying, classifying, and marking these bulk lots. Bulk lots are delivered to the laundry in large divisional laundry bags. You should be careful not to accept laundry bags that are overstuffed. Overstuffed laundry bags cause handling problems during the laundry process. For the purpose of safety and production standards, divisional laundry bags should not be accepted over your washer extractor capacity. If you do accept bags over your capacity, they will have to be split upon the wash deck causing delays and possible claims for loss of clothing. Check bulk lots and make sure the division name is stenciled in large letters on all divisional laundry bags received. You should also check bags to make sure blues and whites are not mixed in one bag. If a divisional laundry bag makes it past the receiving section mixed with blues and whites, it will delay the laundry process on the wash deck as the divisional laundry in the bag will have to be separated. Divisional bulk laundry bags should not be accepted until all discrepancies noted above have been corrected. If policies concerning your laundry process are given to divisional laundry petty officers during the monthly meeting, problems will be eliminated.

RECEIVING INDIVIDUAL LOTS

Bundles received daily in the laundry from officers and chief petty officers are considered as one lot of individually marked bundles. If you have more bundles in the daily lots than available assembly bins, it is best to set up two lots daily. You can then assemble and check out the bundles in the first lot before work from the second lot comes to the assembly bins. Twenty bundles in a lot are easy to handle. Never put more than 50 bundles in one lot.

The number of bundles you should put in a lot is affected by the classification of the items in the bundles. Classification is the separation of a bundle of laundry according to color, type of fabric, and degree of soil; that is, white cottons,

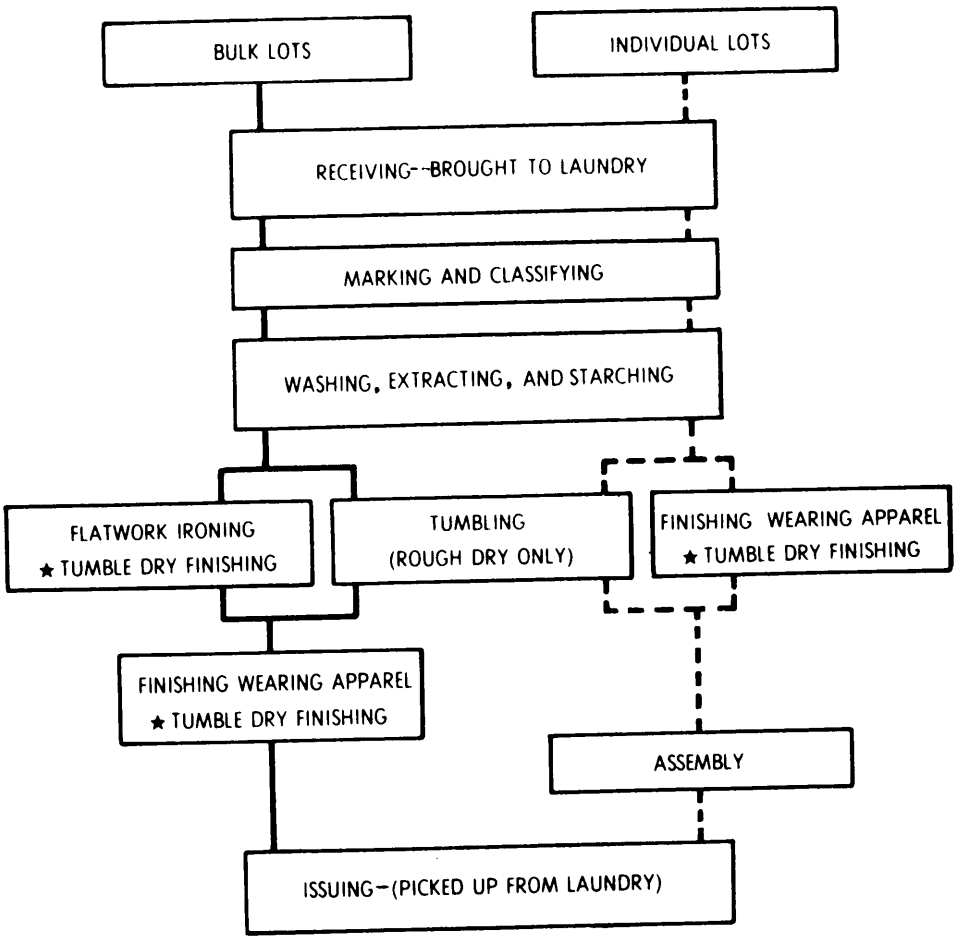


Figure 5-6.—Workflow for a laundry operation.

other white or light-colored fabrics, light cottons with heavy stains, dark-colored cottons, and so forth. Items are classified according to the washing formulas to be used.

HANDLING LOTS

The main problem with handling lots in the laundry is identification. You need to have a good system of identification in the ship's laundry to prevent loss of clothing during the workflow process. There may be several personnel handling the clothing and proper identification is essential.

IDENTIFYING BULK LOTS

The clothing in bulk lots should be delivered to the laundry already stenciled. Each enlisted person is responsible for stenciling his or her own clothing. The laundry petty officer in each division should accept only properly stenciled clothing. Both black and white stencil pens usually are available in the retail store.

Proper stenciling of clothing ensures proper distribution from the laundry. If the laundry supervisor runs into problems with lost clothing and claims, he or she may want to control the items turned in and return these items to each person. The laundry petty officer can list all articles across the top of a sheet of paper and write the people's names in a column down the left side of the sheet. The number of each article sent by each person should be entered in the box opposite the name and below the article. When the articles are returned to the individuals, the names are checked off the list. If all articles are properly

stenciled before they are sent to the laundry, this type of control will generally be unnecessary.

Once bulk work is accepted it is the responsibility of the laundry to make sure it is properly identified from start to finish. You do not have to identify individual items in bulk lots brought to the laundry, but you do need to put some type of marker with each lot so that you can identify it during any phase of processing. You can make your own markers, or flags, from a duck fabric. Cut squares about 8 to 12 inches and hem them. Then stencil one marker for each division, service group, or any activity that brings bulk work to you. When bulk lots are brought to the laundry, put the proper identification markers on them. You can use the same markers week after week. In addition to these markers, the division/department name should be stenciled on the side of the bag in case the marker gets lost during the process.

In the event you are required to split a lot, put the right markers on every part of it. All markers remain with lots and portions of lots during the complete washing and processing cycle. Put the marker in the washer with the load, and identify the load on the shell of the washer with chalk. If it is necessary that you put more than one lot in the washer to get full capacity, use a proper size laundry net for the smallest lot. When more than one net is required for the same lot, use a marker for each net.

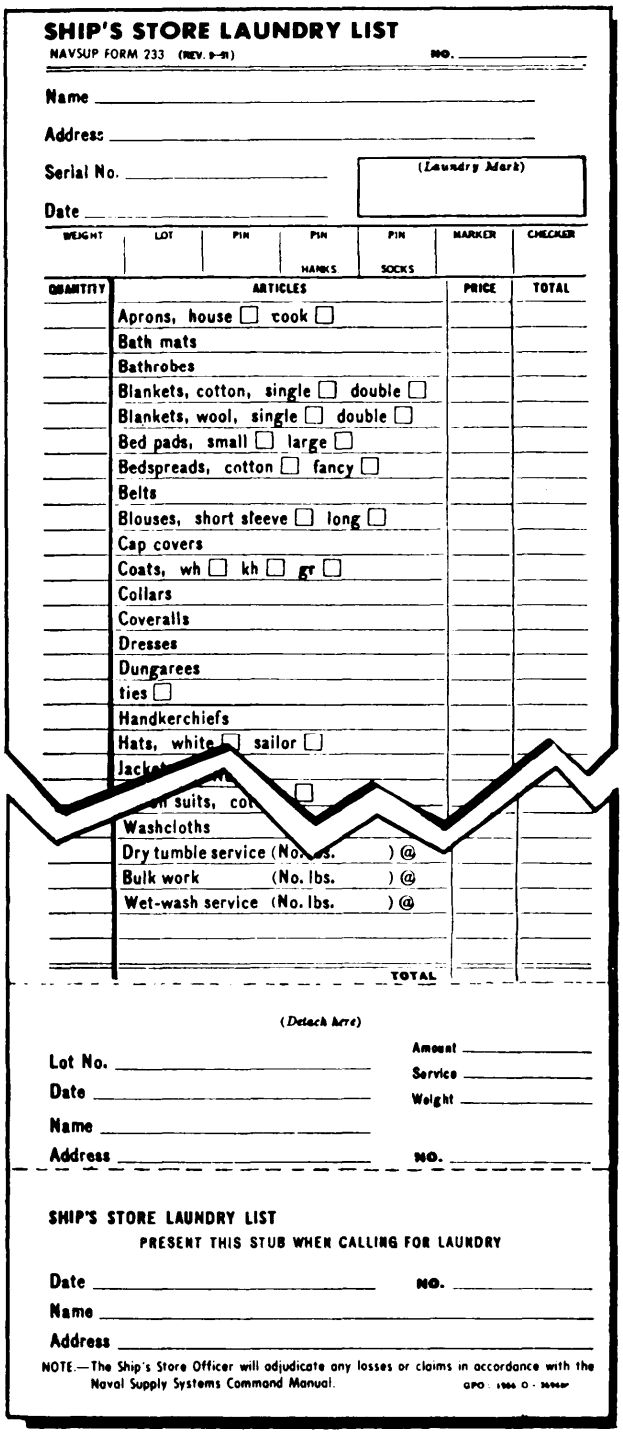
All soiled divisional bulk bags delivered to the laundry should be kept separate from clean laundry. In smaller laundries where space is limited, an effort should be made to have all clean laundry picked up after it is completed.

IDENTIFYING INDIVIDUAL LOTS

Ship's laundries use a Ship's Store Laundry List, NAVSUP Form 233, so officers and CPOs may identify what they have sent to the laundry (fig. 5-7).

Normally, the form contains blanks at the top for the name of the ship, name of customer, rank or rate, social security number, date, and laundry mark. There is usually space for a Customer's-Count column and a Laundry-Count column, aligned with the list of articles.

The customer fills in the lines at the top of the laundry list, enters the number of each article in the appropriate block, puts the laundry list with the laundry, and turns it over to the laundry receiving clerk.



SHIP'S STORE LAUNDRY LIST

NAVSUP FORM 233 (REV. 9-51) NO. _____

Name _____

Address _____

Serial No. _____ (Laundry Mark)

Date _____

WEIGHT	LOT	PIN	PIN HANKS	PIN SOCKS	MARKER	CHECKER

QUANTITY	ARTICLES	PRICE	TOTAL
	Aprons, house ☐ cook ☐		
	Bath mats		
	Bathrobes		
	Blankets, cotton, single ☐ double ☐		
	Blankets, wool, single ☐ double ☐		
	Bed pads, small ☐ large ☐		
	Bedspreads, cotton ☐ fancy ☐		
	Belts		
	Blouses, short sleeve ☐ long ☐		
	Cap covers		
	Coats, wh ☐ kh ☐ gr ☐		
	Collars		
	Coveralls		
	Dresses		
	Dungarees		
	ties ☐		
	Handkerchiefs		
	Hats, white ☐ sailor ☐		
	Jacket		
	suits, co ☐		
	Washcloths		
	Dry tumble service (No. lbs.) @		
	Bulk work (No. lbs.) @		
	Wet-wash service (No. lbs.) @		
	TOTAL		

(Detach here)

Lot No. _____ Amount _____

Date _____ Service _____

Name _____ Weight _____

Address _____ NO. _____

SHIP'S STORE LAUNDRY LIST

PRESENT THIS STUB WHEN CALLING FOR LAUNDRY

Date _____ NO. _____

Name _____

Address _____

NOTE.—The Ship's Store Officer will adjudicate any losses or claims in accordance with the Naval Supply Systems Command Manual.

Figure 5-7.—Ship's Store Laundry List, NAVSUP Form 233.

In conjunction with the laundry list, laundry net bags should be used for the purpose of keeping rough-dry clothing together during the laundry process. They are open-mesh bags made from cotton or nylon in which the clothes are placed

for washing. Nylon nets have generally replaced cotton nets. They resist chemicals better than cotton and thus last longer. They also increase the payload.

You can do effective washing with laundry nets, provided you do not overload them. You must give the water and soap a chance to get to the clothes in order to remove soil.

Nets are especially useful for separating small items such as handkerchiefs or socks from the larger articles. There are two general types of nylon nets—woven and knitted. Woven nets do not stretch and thus retain their size; knitted nets have a tendency to stretch and increase in size. For this reason, the range of knitted nets in capacities is given below:

Size in Inches	Capacity in Pounds
9 by 15 or 10 by 15	2 to 4
24 by 36	8 to 12

Steps in Identifying Individual Lots

The procedure for identifying items in individual bundles described in detail herein has been used successfully in shipboard operation. You may be able to modify this procedure to fit your own needs. The steps in the procedure are as follows:

1. Work on ONLY ONE individual bundle at a time; this prevents mixing of items from several bundles.

2. Remove the laundry list from the bundle and determine from the individual's name and social security number what the laundry mark will be. This mark is made from the first letter of the individual's last name and the last four numbers of the individual's social security number. For example, the laundry mark for SHCM Frederick M. Wishnacht, 123-45-6789, would be W-6789. This is the standard type of laundry mark used throughout the Navy.

3. Set the individual's laundry mark on the marking machine and stamp it across the face of the laundry list. Check the mark for accuracy. This list now denotes ownership of laundry in the bundle.

4. Count every article in the laundry bundle and enter the number in the correct block on the laundry list. If your count does not agree with that of the customer, ask the senior laundry man to recheck it. When the senior laundry man's count is in disagreement with that of the customer, he or she should enter the correct count on the laundry list, circle the customer's count, then initial the circle and notify the customer of the change through whoever brought in the laundry bundle.

5. Check each article for a correct legible mark. If there is not a mark, put ONE ONLY in the proper place (explained later). Do NOT mark such items as bath towels, wet articles, or dark-colored fabrics. Use pronged marking tags on these items. These tags are narrow strips of cloth approximately 1 inch long with metal fasteners in the ends. Push the metal fasteners through the material and press them flat on the other side. Enter the correct identification on the tags.

6. Check the inside of all pockets for any articles such as pens, pencils, lighters, combs, and so forth. If any items are found in the pockets, a notation should be made on the NAVSUP Form 233, Ship's Store Laundry List, and also in the laundry logbook so these items can be returned to the owner.

7. Check all articles of clothing for any tears, stains, missing buttons, and so forth. Any items found to be damaged should be noted on the reverse side of the laundry list and also in the Remarks column of the laundry logbook.

8. Clear the laundry marking machine by setting all type to the neutral position when you finish with one bundle. You are ready to start on another bundle.

Location of the Laundry Mark

There is a standard spot for the laundry mark on each article. If the mark is correctly placed in this location, the receiving clerk can check items in easily and quickly. The clerk can also check and assemble finished articles without unfolding them. The locations of laundry marks are as follows:

- Underwear—On the inside of the waistband, left of center of the label.

- Handkerchiefs—Do NOT mark. Put them in a net and identify with a marked strip tag placed on the inside or pinned on the outside. Some handkerchiefs are made of fine linen and are expensive. A mark would be ugly if used on such articles and exposed to view.

- Shirts—On the front inside shirttail.

• Tropical shorts—On the inside waistband of shorts, right side, in line with the outside leg seam.

• Socks—Socks are NOT marked; instead, marks should be put on a piece of sheeting and then placed inside a standard 10-inch by 15-inch laundry net used for washing socks. The socks should be untied and loose in the net. A separate net should be used for each individual.

• Undershirts—On the inside, 1 inch to the left of the label.

RIBBON-TYPE LAUNDRY MARKING MACHINES

Shipboard laundries use a ribbon-type laundry marking machine to mark all clothing (fig. 5-8). The ribbon-type machine uses a lever principle for setting the mark. The lever is attached directly to the type wheels, each of which contains all numerals and complete alphabet. The procedure for

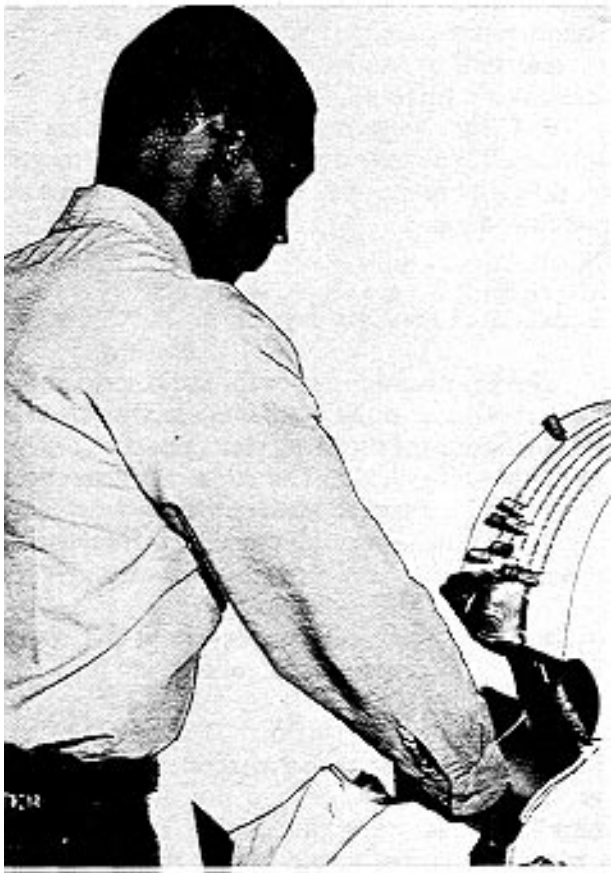


Figure 5-8.-Laundryman using the laundry marking machine.

marking laundry is the same on most types of marking machines:

1. Put the item to be marked underneath the tension plate and over the platen. The tension plate holds the item in place so the laundry mark can be placed exactly where you want it.
2. Raise the printing lever forward with both hands to bring the item to be marked into contact with the type. Use a steady push on the lever for best results.
3. Check the mark for clarity. If it is not clear, repeat the process.

Operating Ribbon-Type Machines

Some things to remember when you are operating a Ribbonrite marking machine are as follows:

1. Keep the printer arm down when you set the type handles. This will prevent wrinkling of the ribbon.
2. Use both hands to operate the machine. Use a complete stroke and make quick, sharp contact with the article being marked.
3. Unfold shirt collars before you mark them.

Care and Maintenance of Laundry Marking Machines

A certain amount of care and maintenance must be given to laundry marking machines to keep them in good working order and to extend their usefulness. Keep all parts of the marking machine clean, type faces in particular. Proceed as follows:

1. Bring the type levers to the full FORWARD position.
2. Depress the clip on the back of the cover (bottom) and unlock it in front.
3. Raise the index handles to bring the type into the most accessible position and clean it with the wire brush provided by the manufacturer for this purpose.

Another way to clean the type assembly is to remove the assembly by first removing the pin inserted through the shaft channels over the shaft and disengaging the spring lock. After the assembly is removed, clean it with a steam gun.

When parts of the machine become worn, they should be replaced with new ones. Keep a supply of the most used repair parts on hand. A

manufacturer's instruction manual is furnished for each laundry marking machine. The mechanic who works on the machine should also have a copy of this instruction book. Do not try to do any mechanical work on the machine unless it is absolutely necessary. Always request that the work be done by a trained person from the engineering department.

Ships Without Laundry Marking Machines

All ships are required to have a laundry marking machine on board. Ships' laundries temporarily without laundry marking machines will have to use laundry marking pens while a machine is being procured or the old one repaired. The laundry supervisor should obtain white and black laundry markers from the bulk storeroom and charge them to cost of operations laundry. These pens will serve the same purpose as the laundry marking machine; however, they will probably slow the work process while marking clothing. For individual lots, the laundry mark has to be handwritten on the Ship's Store Laundry List, NAVSUP Form 233. Care should be taken while marking clothing with marking pens to make sure the mark does not go completely through the fabric. It is best to stencil on a semifirm surface such as cardboard, making sure you do not press too firmly. Be sure the ink from the stencil is completely dry before placing the clothing with the remainder of the lot.

WASHING

The primary goal of the washing process is to remove all soil from the fabrics being washed. This is done through a series of baths in which the soil is loosened from the fabric, suspended in the water, and rinsed away. There are five baths in the washing cycle—the breaksuds, the flush suds, two rinse baths, and the sour bath. During the first two baths, the two-shot detergent (detergent/oxygen bleach) removes and loosens the soil so it may be rinsed away.

Sour is used in the last rinse cycle to neutralize alkalinity and to decompose any remaining traces still in clothing.

FABRICS

The laundry personnel should be familiar with the different kinds of fabrics. In general most fabrics can be safely laundered in the ship's laundry without causing damage provided they are resistant to the laundry chemicals used. Therefore, it is a good laundry practice to first determine what type of fabric you are washing and take every precaution to prevent damage. It is essential that all laundry personnel know the different kinds of fabrics.

To minimize the effects of chemicals on fabrics, classify all clothing according to color, fiber content, and degree of soiling. Wash lightly soiled articles separately from heavily soiled items to minimize redeposition of soil on fabrics, causing them to look gray/dull. Wash colored fabrics separately from whites to avoid color transference.

For maximum washing efficiency, do not exceed load limits of equipment. In the case of synthetics/blends, washer loads should not exceed three-fourths of the rated capacity to provide for maximum mechanical action, cleaning efficiency, and to avoid wrinkling.

Never use hot flushes with supplies before the first bath. In the case of synthetics or synthetic blends, a hot flush with no supplies will soften the fabric and allow soil to penetrate more deeply. Synthetics or synthetic blends do not absorb water, making rinsing easier. The final extract should be consistent with the Navy wash formula. Laundry chemicals should come in contact with fabrics ONLY AFTER appropriate water levels are achieved. The two-shot detergent mentioned earlier is used in washing all shipboard clothing and textile items, including synthetics and synthetic blends, and no other washing chemical should be used in place of them.

TYPES OF SOIL

In general there are four types of soils. Some can be removed during the washing process and some cannot. It is important that you know them so you can decide whether they require special treatment.

CHEMICAL SOLUBLE SOILS

Chemical soluble soils are soluble or readily dissolvable in chemical solvents. Soils of this type include oils, greases, certain waxes, fatty acids (which are mainly body oils), and vegetable, mineral, and animal oils. These soils usually are not soluble in water and may require special treatment.

WATER SOLUBLE SOILS

Water soluble soils are such substances as sugar, starch, gums, salt, flavoring agents, and syrups, as well as a wide variety of substances generally found in such foods and beverages as mustard, catsup, soups, and soft drinks. Perspiration stains are also included in this category. These types of soils are removed during the normal laundering process.

INSOLUBLE SOILS

Insoluble soils, substances that are not soluble or dissolvable in either water or chemical solvents, are the materials most commonly found in fabrics and constitute the bulk of the soils removed in the laundry. Included are earth, concrete dust, sand, carbon, ashes, lint, hair, cosmetics, and dandruff. These types of soils are usually less visible than oils, greases, or food stains, but they contribute greatly to fabric damage due to fiber abrasion.

Most insoluble soils are readily dispersed during the wash cycle, but their complete removal may prove more difficult. Such soils are sometimes redeposited on the garments during the laundry process, a condition that can cause "graying" of the fabric.

SPECIAL SOILS

Special soils are insoluble in either water or laundry chemicals. They may be removed partially or entirely using spotting operations. These soils include nail polish, paint, ink, various kinds of adhesives, and so forth. Spotting operations are discussed in the dry-cleaning chapter.

THE WASH WATER

Water is the most important item used in a laundry. Not only is it needed in quantity, but the quality of water used has an important effect on the washing process.

At sea, where quantities of suitable wash water are always subject to greater limitations than ashore, you may not always have enough soft water available. To conserve fresh water, you may be required to use seawater.

When water comes from clouds as rain or snow, it picks up carbon dioxide gas. As the water seeps through the ground, the carbon dioxide gas dissolves limestone and some other substances, and the water collects calcium and magnesium salts. The salts are in the form of bicarbonates, chlorides, nitrates, and sulfates. The kind and quantity of these substances are determined by the soil the water passes through. Water that contains an appreciable quantity of salts is HARD water. SOFT water is water that has not picked up salts from the earth, or water that has had these substances removed or neutralized. Since seawater contains the concentration of salts, it is the hardest of all wash waters.

TYPES OF HARD WATER

In laundry terminology, hardness in water is the power to kill soap. When soap is added to hard water, the calcium and magnesium salts in the water combine with the soap to form insoluble lime soaps. These soaps then unite (precipitate) in the form of a sticky, insoluble deposit. This reaction kills the soap and makes it useless for washing, and the sticky deposit traps dirt and puts it back on the fabric in the form of scum. If no dirt is present, the scum is white and is seen as a film on the clothes.

There are two types of water hardness:

1. Temporary hardness—Water that contains calcium and magnesium bicarbonates is called temporary hard because these elements can be removed by boiling. Scale on the inside of steam kettles and steam boilers is due to the precipitation of insoluble carbonates as the hard water is boiled.

2. Permanent hardness—Water that contains calcium and magnesium chlorides that are NOT affected by boiling is said to be permanently hard. Permanent hardness requires special treatment with chemicals or by distillation.

WATER SOFTENING METHODS

The methods generally used to soften water are known as the base exchange and distillation. The base exchange method softens water when the compounds of calcium and magnesium in the water are exchanged for compounds of sodium which do not cause hardness.

The distillation method softens the water when it is boiled and the vapor is cooled by running it through pipes immersed in a cold solution to reconvert it to water. The distillation method is used to make seawater usable for a ship's boilers and other shipboard uses. Seawater distillate is not pure water, but it contains only about 1/20,000 of its original concentration of salts.

LAUNDRY DETERGENT

The detergent/oxygen bleach is intended for shipboard laundering of cotton, synthetic, and blended items using fresh water or seawater. It is referred to as the two-shot detergent because it includes a detergent and oxygen-based bleach and is mixed and ready to use. Since it is premixed you won't have to proportion laundry chemicals as in the past. As long as you add the correct amounts to the washer, the chemical proportion will be correct. Figure 5-9 shows the wash sizes and the amounts of two-shot detergent that should be used with fresh water and seawater.

The two-shot detergent uses an oxygen-based bleach that is safe in washing all fabrics, therefore, the problem in damaging colored clothes with bleach is eliminated. The bleach is an integral part of the detergent and will not require special handling as it is not reactive to the other ingredients in the formulation. The detergent/oxygen bleach releases a sharp, unpleasant solvent-type odor into the air while being used. You should not be alarmed by this smell because the smell will not be transferred to the clothing.

WASHING FORMULAS

The Navy recently changed all Navy wash formulas to include the two-shot detergent. The new wash formulas were developed by the Navy to help shipboard personnel produce whiter and brighter washes. The formulas are illustrated in figures 5-10 through 5-12. These formulas have been tested in laundries aboard ship and have been found satisfactory for the type of work indicated. These formulas were developed to conserve energy and to meet environmental regulations while providing quality laundry. These formulas should be posted on the wash deck for laundry personnel to read and follow.

RINSING

Rinsing removes soil and cleaning solutions from the clothes. Poor rinsing results in grayness, disagreeable odors, harsh finish, and generally poor quality work.

The number of rinses used should always be according to the Navy wash formula you are using and should not be modified. Under normal conditions, following the Navy wash formula in regards to the number of rinses, the rinse water levels, water temperature, and time of running will bring desirable results. If clothes that are heavily soiled do not come out clean in the first wash they should be washed again according to the Navy wash formula.

LAUNDRY SOUR

Laundry sour is added to the last rinse to neutralize the remaining alkalies and to dissolve

	Dosage	
Wash Size (Pounds)	Fresh Water (Ounces)	Seawater (Ounces)
16	2.6	3.2
20	3.2	4.0
35	5.6	7.0
60	9.6	12.0
100	16.0	20.0
135	21.6	27.0
150	24.0	30.0
200	32.0	40.0

Figure 5-9.—Two-shot detergent amounts.

NAVY FORMULA I
HIGH TEMPERATURE FORMULA (160°F) WITH OXYGEN BLEACH
CLASSIFICATION: White and Colorfast Cotton, Synthetic, and Blended Fabrics
(White Certified Navy Twill Uniform Items)

Step	Notes	Operation	Cycle Time (Minutes)	Water Temperature (Degrees Fahrenheit)	Water Level (Inches)	Supplies (100-lb Basis)
1	A	Break suds	10	160	4	16 oz detergent/ oxygen bleach
2		Drain	1			
3		Flush suds	6	160	4	
4		Drain	1			
5		Spin	1			
6		Rinse	3	160	4	
7		Drain	1			
8		Rinse	3	160	4	
9		Drain	1			
10	B	Sour	4	130	4	2.0 oz sour bacteriostat 12 oz instant starch
11		Drain	1			
12		Final Spin	4			

A. Detergent may be added directly to the wash once water level has been reached.

B. Add starch and run for 10 minutes in the manual mode when starch is required.

FOR SEAWATER WASHING

1. Use seawater in steps 1 and 3. Detergent bleach should be increased to 20 ounces.

2. Use fresh water in steps 6, 8, and 10.

Figure 5-10.—Navy wash formula I.

NAVY FORMULA II
HOT FORMULA (140°F) WITH OXYGEN BLEACH
CLASSIFICATION: Colored Cotton, Synthetic and Blended Fabrics - (Khaki Cotton, Certified Navy Twill & Blend Dungarees)

Step	Notes	Operation	Cycle Time (Minutes)	Water Temperature (Degrees Fahrenheit)	Water Level (Inches)	Supplies (100-lb Basis)
1	A	Break suds	10	140	4	16 oz detergent/ oxygen bleach
2		Drain	1			
3		Flush suds	6	140	4	
4		Drain	1			
5		Spin	1			
6		Rinse	3	140	4	
7		Drain	1			
8		Rinse	3	140	4	
9		Drain	1			
10	B	Sour	4	120	4	2.0 oz sour bacteriostat 12 oz instant starch
11		Drain	1			
12		Final Spin	4			

A. Detergent may be added directly to the wash once water level has been reached.

B. Add starch and run for 10 minutes in the manual mode when starch is required.

FOR SEAWATER WASHING

1. Use seawater in steps 1 and 3. Detergent bleach should be increased to 20 ounces.

2. Use fresh water in steps 6, 8, and 10.

Figure 5-11.-Navy wash formula II.

NAVY WASH FORMULA III
LOW TEMPERATURE FORMULA
CLASSIFICATION: WOOLENS, SYNTHETIC, COTTON BLENDS, AND NONFAST COLORS

Step	Operation	Cycle Time (Minutes)	Water Temperature (Degrees Fahrenheit)	Water Level (Inches)	Supplies (100-lb Basis)	Notes
1	Break/suds	5	100 to 120	9	14 to 16 oz detergent oxygen bleach	A
2	Drain	1				
3	Flush/suds	5	100	9	4 oz detergent if required	
4	Drain	1				
5	Spin	1				
6	Rinse	3	90	9		
7	Drain	1				
8	Rinse	3	90	8		
9	Drain	1				
10	Sour	4	90	8	1.0 oz sour	
11	Drain	1				
12	Final Spin	4				

A. Detergent/bleach may be added to the wash wheel once the water level has been reached. Detergent amounts are based on a 100-lb basis and must be adjusted according to the size of the washer extractor used.

FOR SEAWATER WASHING

1. Use seawater in steps 1 and 3. Detergent bleach should be increased to 20 oz.

2. Use fresh water in steps 6, 8, and 10.

Figure 5-12.—Navy wash formula III.

iron and other metallic salts that cause rust or a yellow discoloration. If left in fabrics these chemicals cause odors and discoloration after drying.

Another reason for using a sour in the last rinse is that it removes sodium bicarbonate, which is normally in the rinse water. Even though other chemicals may have rinsed out, sodium bicarbonate remains. It is not injurious to fabrics in itself, but when subjected to the heat of flatwork ironers, presses, or hand ironers, it is converted to sodium carbonate which is quite alkaline and in sufficient concentration can cause injury to fabrics.

Souring also decomposes any oxidizing bleach left in a load, prevents discoloration, and helps to sterilize the clothes. In addition, sour sets acid dyes often used in bright-colored fabrics and preserves the tensile strength of fibers. Laundry sour also removes rust stains.

There are many different laundry sours of varying strengths, including acetic acid, fluorosilic acid, hydrofluoric acid, and several types of fluoride (ammonium, sodium acid, and sodium silico). Fluoride is generally used. The sour required for use is combined in the powdered form with powdered blue (NSN 7930-00-205-2882).

STARCH

Starch is applied to wearing apparel and other linens to give them body, smoothness, and an improved appearance. Only cotton fabrics should be starched in the ship's laundry. DO NOT starch synthetic and synthetic blend fabrics or work clothes. The amount of starch used should be the amount indicated on the formula.

Starching should only be done in the automatic mode; however, when you have to do it manually, follow these steps:

1. Do not drain the sour/blue bath. Reduce water to a low level with the water at temperature indicated on the formula. Add the proper amount of starch.
2. Run the machine for 4 minutes, long enough to allow the starch to penetrate the shirts.
3. Drain the starch from the machine while it is running to prevent the starch from settling on the load.

WASHER EXTRACTORS

Washer extractors installed aboard ship differ mainly in load capacity. The Naval Sea Systems Command (NAVSEA) publishes the *Navy Laundry and Dry-Cleaning Equipment Catalog* (Tech Manual #S6152-B1-CAT-010). This catalog is used by the Navy to obtain information for identification, selection, and procurement of standard naval shipboard laundry and dry-cleaning equipment. The washer extractors used by the Navy are listed in figure 5-13. This catalog includes several different types and sizes of washer extractors, however, the Edro (Dyna Wash) and the Pellerin Milnor washers are the ones most widely used by the Navy.

Washer extractors are basically made up into two parts, the outer shell and the cylinder. The shell holds the water and cleaning ingredients, while the cylinder hold the clothes.

The cylinder is perforated to allow water and suds in the bottom of the shell to enter and clean the clothes during the wash cycle. The washer extractor then extracts the water from the cylinder by using centrifugal force. A separate extract motor spins the cylinder at a high speed to do this.

OPERATION OF THE WASHER EXTRACTOR (EDRO MODEL)

The washer extractor manufactured by the Edro Corporation, better known as the Dyna Wash, is procured in three sizes—200-, 100-, or 60-pound sizes. The 100-pound Dyna Wash (including basic parts) is illustrated in figure 5-14. This washer extractor was designed to provide an easy and safe method of washing clothes, therefore, training personnel to operate the machine is easy. Since the washer extractor is automatic, the only thing the operator will have to do is load, add supplies, and unload.

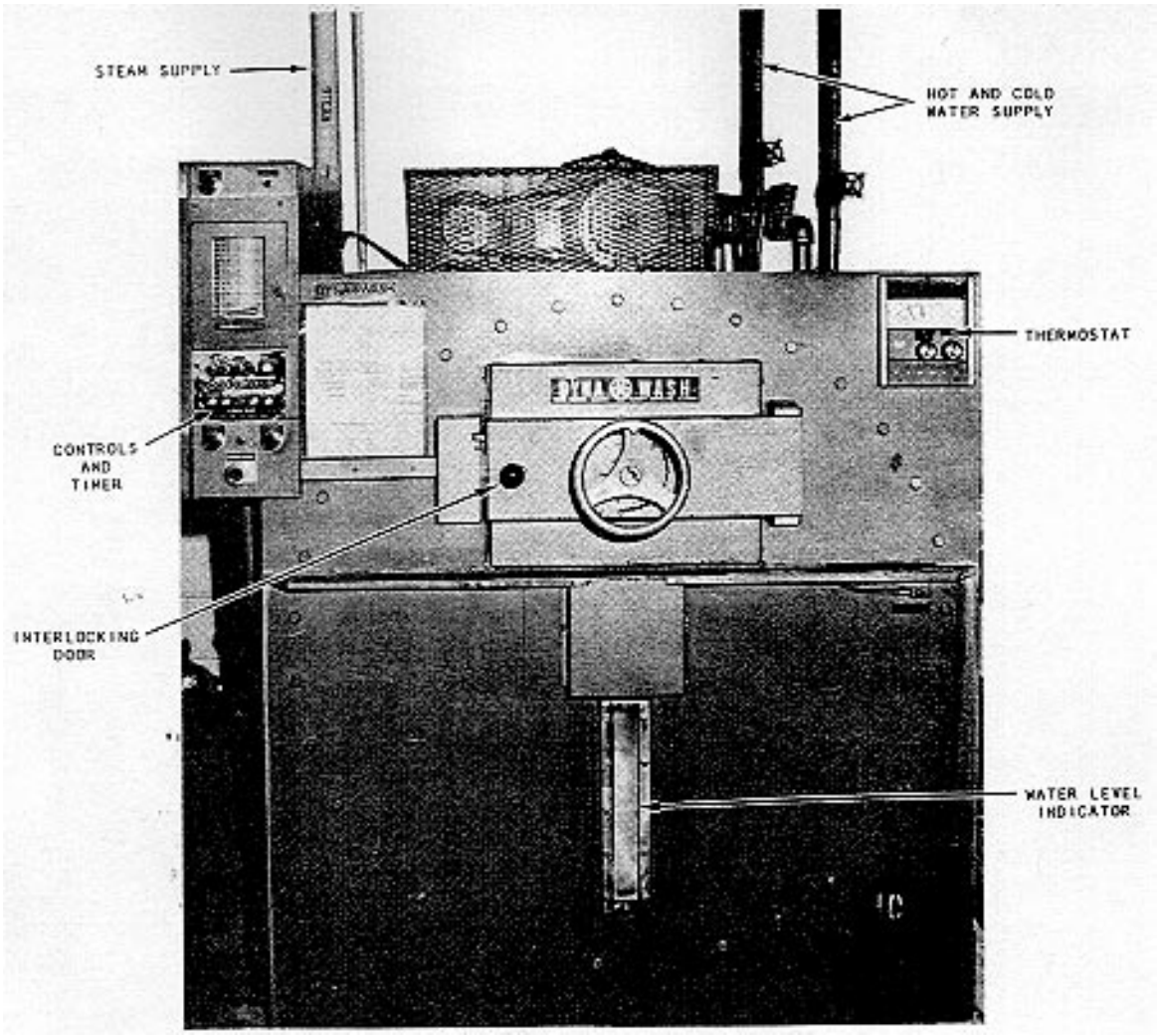
WASHER EXTRACTOR CONTROLS

The Dyna Wash control system consists of two parts, the control panel and the programmer. The control panel is illustrated in figure 5-15. This panel may look slightly different on some models; however, the purpose of the basic controls on this panel is the same.

The control switch energizes all electricity to the control panel and programmer. This control switch must be energized before you can use any of the basic controls. The basic controls on the control panel are used when loading and unloading the washer. By depressing the jog switch simultaneously with the reverse or forward switch, the washer cylinder will rotate in that

ITEM SEQ NO.	FUNCTIONAL DESCRIPTION	SPECIFICATION PROCUREMENT REQ'MTS	MANUFACTURE AND MODEL NO.
WASHER/EXTRACTORS			
1	200-pound washer/ extractor	MIL-W-19044C	Edro Corporation Model DW 2000MNSWE
2	100-pound washer/ extractor	MIL-W-19044C	Edro Corporation Model DW 1000C
3	60-pound washer/ extractor	MIL-W-19044C	Edro Corporation Model DW 600 B
4	200-pound washer/ extractor	MIL-W-19044C	Pellerin Milnor Corp Model 4244CM3
5	135-pound washer/ extractor		Pellerin Milnor Corp Model 4231CM3
6	60-pound washer/ extractor	MIL-W-19044C	Pellerin Milnor Corp Model 36021CME
7	35-pound washer/ extractor		Pellerin Milnor Corp Model 36016CME
8	60-pound washer/ extractor	MIL-W-19044C	A-A Laundry Machinery Corp Model 38 × 19
9	20-pound washer/ extractor	MIL-W-23554, except for capacity	Hoyt Corporation Model HD 2000
10	16-pound washer/ extractor (Submarine use only)	MIL-W-23554, Type I	Wascomat Corp. Model WASCONAUTIC

Figure 5-13.—List of washer extractors used.



43.33

Figure 5-14.-100 pound washer extractor basic parts.

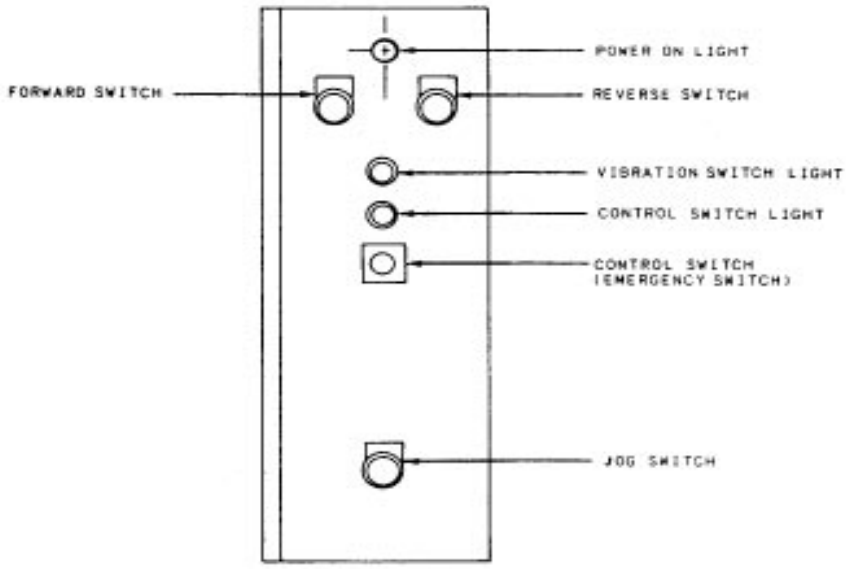


Figure 5-15.-Layout of a washer extractor control panel.

direction until the cylinder door is lined up with the outer shell door.

The programmer is illustrated in figure 5-16 and lists all major controls and indicators. The drain indicator and switch open or close the drain and indicate when it is in use. Depress the cold or hot water indicators and switches to add cold or hot water. A light on the panel indicates when the programmer is in use. The master and timer indicator lights are used in conjunction with the operation of the timer. Once these two switches are energized, the timer wheel begins to move. The wash indicator light is also used in conjunction with the master switch for operating the machine in the manual mode. The steam indicator and switch are used to emit steam to the machine in the manual mode or indicate steam is being added by the light being lit during the automatic mode. The signal indicator light and switch light up and sound a bell when the automatic cycle is complete to alert laundry personnel. The extract indicator light and switch are used to energize the extract motor during the manual mode and light up when extract is being used during the automatic mode.

A microswitch is installed inside the programmer to protect the user. Once the door to the programmer is opened, the microswitch pops out and de-energizes the circuit to prevent electrical shock. The drum control disk is used to manually turn the program wheel around.

As you can see there are several controls, however, if you run the machine automatically the way it was intended, you will never have to use most of them.

DESCRIPTION OF THE PROGRAMMER

The operation of the programmer is controlled by energizing the control switch on the control panel and then energizing the master and timer switch on the programmer. (See fig. 5-16.)

A program chart is cut to conform with Navy wash formulas and is installed on the control disk wheel inside the programmer. Also inside the programmer are fingers that drop into grooves that were cut in the program chart. Once these fingers come in contact with the metal on the disk, they energize that particular operation. The disk

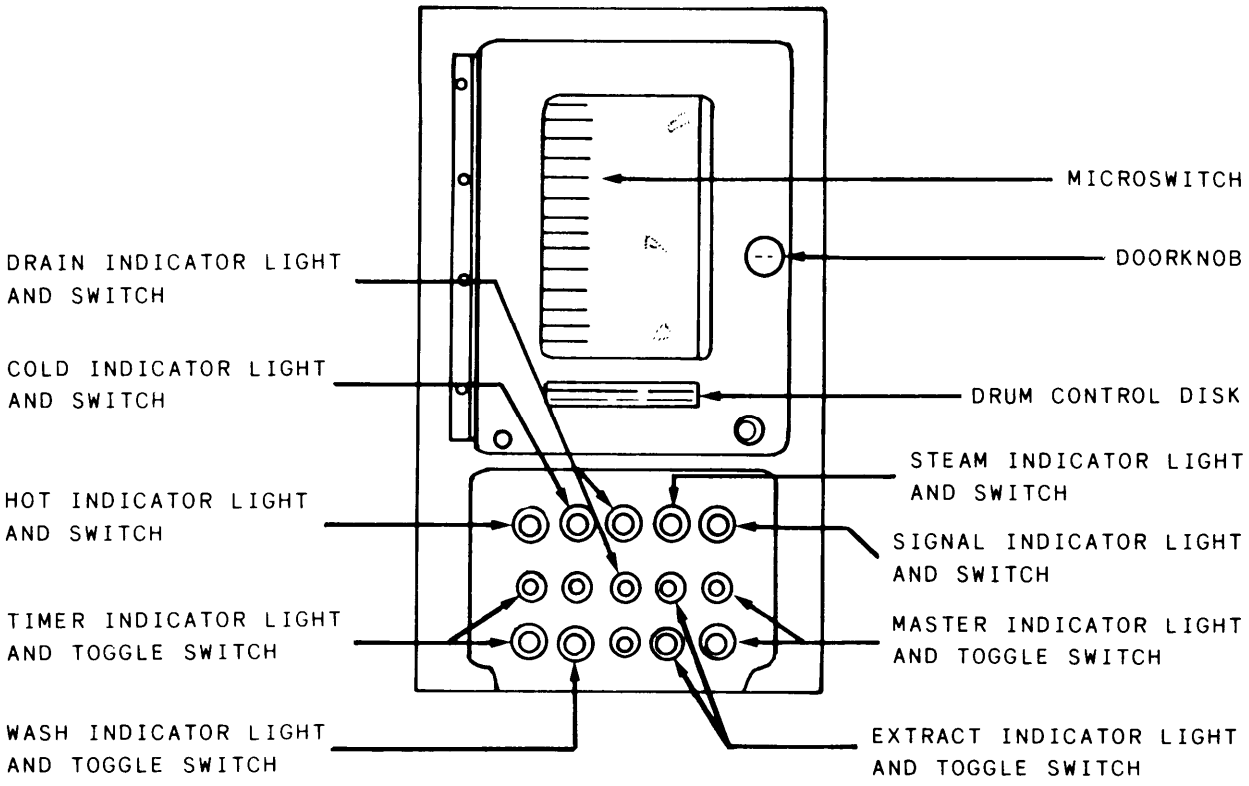


Figure 5-16.—Layout of washer extractor programmer.

continues to rotate until the timer switch is off or when one of the following occur:

- The disk stops until proper water levels are reached.
- The disk stops until correct water temperatures are acquired during steam injection.
- The disk stops while adding supplies from the automatic dispenser.
- The disk stops when the signal goes on.

After the completion of the cycle and when the signal alarm goes off, the timer switch should be de-energized to prevent the chart from advancing again.

PROGRAM CHART

In conjunction with the wash formula, a program chart is cut according to the Navy wash formula. These charts, available through the supply system, are used with the automatic programmer on the washer extractor to make sure the Navy wash formula is followed to the letter. Your local fleet assistance team is available to provide assistance in cutting the chart. A sample program chart is illustrated in figure 5-17. Keep in mind this is a sample chart only and should not be referenced in cutting your own chart.

Temperature Control

This control on the program chart regulates the temperature of the water. The desired temperature of the water in the washer extractor is controlled by a thermostat located on the

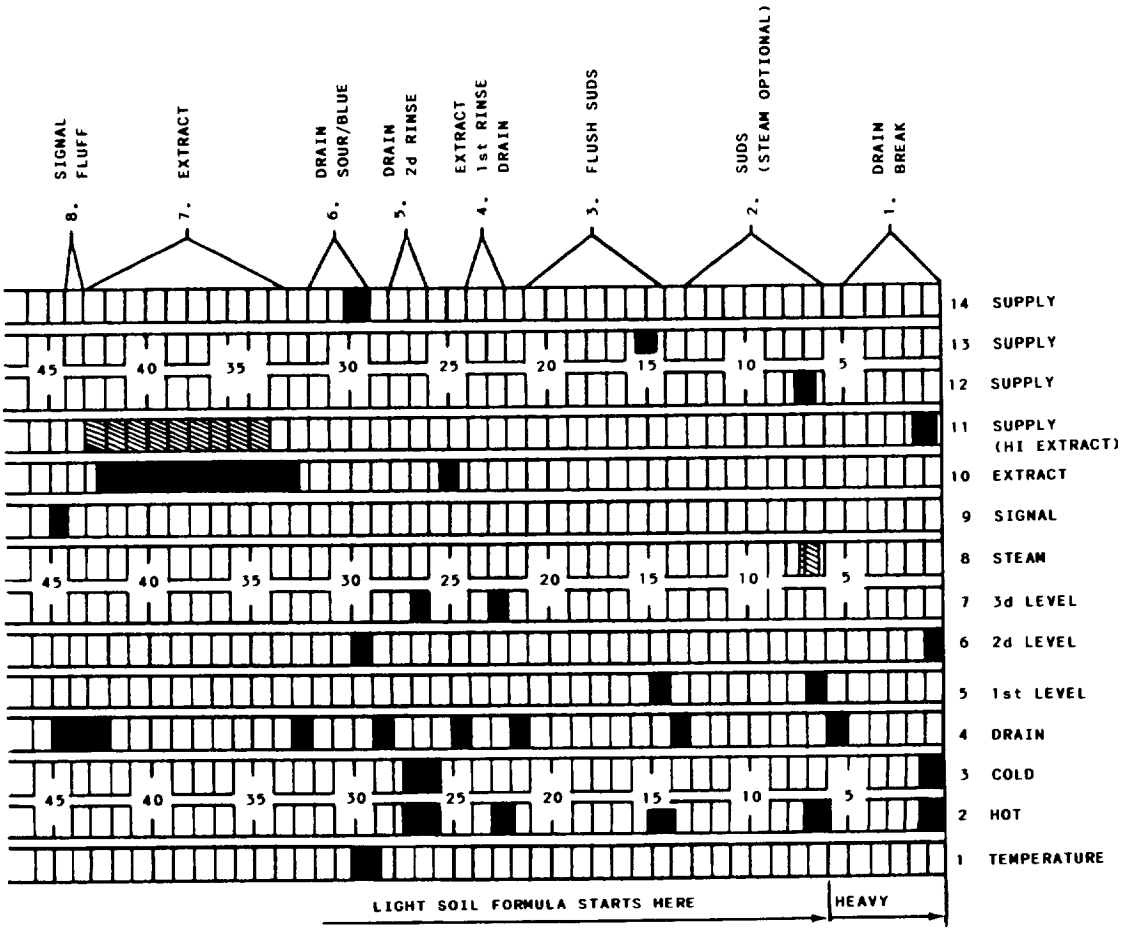


Figure 5-17.—Sample program chart.

washer itself (fig. 5-18). This thermostat can control two temperature settings, the high temperature for washing and the low temperature for sour. The low temperature is controlled by turning the black pointer on the thermostat to the desired temperature setting. Once the temperature control slot is reached on the program chart, hot water is added to the washer and tempered with cold water to reach the desired temperature you set on the thermostat. The desired temperature will always be the lower temperature on the Navy wash formula.

To set the high temperature, move the red pointer on the thermostat to the high temperature setting on the wash formula. During the break suds, hot water is admitted into the washer. The hot water stops when water levels are reached and then steam is admitted until the high temperature is reached. The third pointer in the thermostat indicates the actual temperature in the washer.

Water Levels

Water levels in the washer are controlled by slots 5 through 7 on your program chart (fig. 5-17). Wash formulas are based on certain amounts of water. If the amounts are other than indicated, your concentration of supplies will not be correct. Water levels are preset at the factory; however, they may have to be adjusted to conform to Navy wash formulas. Water levels should be reached before steam is admitted into the washer. If you notice steam being admitted into the washer before water levels are reached, the cutting of the program chart should be rechecked.

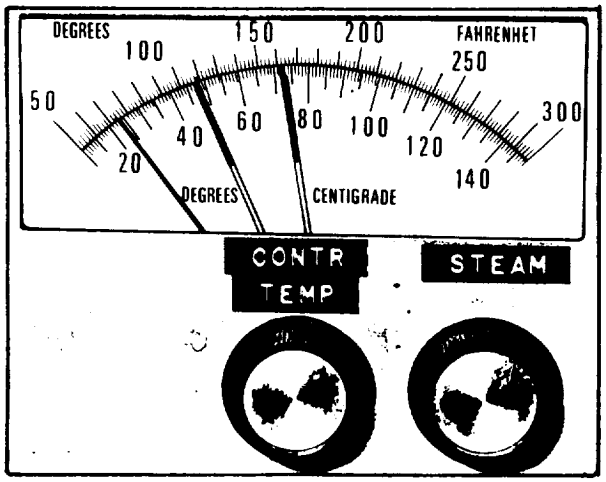


Figure 5-18.—Washer extractor temperature control.

Automatic Supply

The automatic injection of supplies into the water is done by slots 11 and 12. The automatic supply bins that are located on the right side of the washer extractor contain four bins. Navy wash formulas I and II require three supplies and Navy wash formula III requires two supplies. Therefore, you will only use two bins because sour and starch can be added together. This means only two of the four slots on the program chart will be cut to allow these supplies into the washer drum.

SAFETY FEATURES

All laundry personnel should be familiar with washer extractor safety features to prevent personal injury and/or damage to equipment. The laundry supervisor should prepare a locally prepared document that covers all safety features noted in the equipment technical manual. The safety features listed below are generally true for all models; however, check your technical manual for any additional safety features.

1. During the wash cycle the washer extractor will cut off if the outer shell door is opened.
2. The outer shell door of the washer extractor will not open during the extract cycle because of an interlock switch.
3. Both hands must be used to operate the jog switches on the control panel.
4. The control switch on the control panel or the master switch on the programmer can be used as emergency stops.
5. The vibration switch is installed to stop incorrectly loaded machines during extract.
6. The air pressure switch will not allow the machine to operate on less than 50 pounds of air pressure for the wash cycle and 80 pounds of air pressure for extract.
7. The automatic brake engages during power loss or emergency stop.
8. The positioning interlock switch is installed to eliminate the possibility of having the wash motor activate while the outer shell door is open.

PREOPERATIONAL CHECKS

Before actually operating the washer extractor, be sure you are ready by doing the following:

- Check your steam supply (100 pounds is ideal).

- Check to make sure you have fresh water.
- Check your air pressure (the washer extractor will not operate if less than 50 pounds).
- Make sure all other switches are off when you energize the control and master switches so nothing else will energize.
- Turn equipment on; check for response (lights, dump closed, and so forth).
- Check the cylinder door; make sure it is secured.
- Check the thermostat for proper temperature settings.

AUTOMATIC OPERATION

Figure 5-19 shows a laundryman loading a Dyna Wash. Except for loading, unloading, and adding supplies all functions in the automatic mode are done for you. When loading the Dyna Wash, you should divide the wash load into three equal piles. There should be no more than a 10 percent difference in the weight of each pile. Overloading a washing machine is one of the chief causes of breakdowns because greater strain than the manufacturer intended is placed on all moving parts, particularly the motor. Overloading also results in poor washing because the water and cleaning solution do not have adequate space and sufficient agitation to remove soil. Underloading, on the other hand, results in a waste of water and cleaning supplies. You should, therefore, weigh every load of clothes for each compartment in the

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Figure 5-19.-Loading the washer extractor.

cylinder. Once you have done your preoperational checks, you are ready to operate the washer extractor using the following procedures:

1. Open the shell door.
2. Energize the control switch; make sure all other switches are in the OFF position before doing this function.
3. Rotate the cylinder with the jog switch, used simultaneously with the reverse or forward switch until the cylinder door is opposite the shell door opening.
4. Turn off the control switch.
5. Open the cylinder door. CAUTION: NEVER place hands inside the shell or cylinder while the control switch is energized.
6. Load washer to rated capacity.
7. Mark on the washer with chalk what is in each pocket (each cylinder door is numbered 1, 2, or 3).
8. Close the door to each cylinder; latch it securely.
9. Close the outer shell door.
10. Add required supplies to the automatic dispenser; make sure you place them in the correct bin.
11. Use the drum control disk to set the programmer chart to the beginning; make sure the master switch to the programmer is off while doing this.
12. Energize the control switch, master switch, and timer switch (in that order).

From this time on, the operator normally will not have to return until the signal sounds. The bell to this signal can be silenced by securing power or depressing the button.

MANUAL OPERATION

If the automatic timer is inoperative, you will have to operate the machine manually. Manual mode should not be used when the washer timer is operating properly. The controls and switches as mentioned earlier when used properly allow the operator to use the manual mode. Looking back at automatic operation you should follow all steps up to and including step 9 and then follow these instructions:

10. Turn the control switch on.
11. Start the wash motor by energizing the wash and master switches.
12. Make sure all other switches are off and the drain switch is closed.
13. Add water to the proper level and at the proper temperature, as indicated on the wash formula. If the water is not hot enough, use steam to bring it to the desired temperature.
14. Add chemicals as prescribed by the washing formula, through the supply door when the cylinder is passing the supply door in the downward direction.
15. Start timing the bath (follow formula).
16. Open the drain switch and drain the water when time for each cycle elapses.
17. Permit sufficient time for the water to drain from the shell after the water level reads zero, and then close the dump valve.
18. Repeat steps 14 through 17 until the wash formula reaches the extract cycle of the formula.
19. Leave the valve open for more complete drainage after the last bath.
20. Start the extraction cycle. Move the switch to extract position. When extraction is completed, move the switch to WASH or INCH position as desired.
21. Secure the power, loosen the handwheel, and open the outer shell door only after the washer cylinder comes to a complete stop. Use the jog switch to align the cylinder doors, then open and unload each pocket.

LOADING AND UNLOADING

Before the wash in the washer extractor is done, attending laundry personnel should have three piles of sorted and weighed soiled laundry ready for loading. The unloading process is just the opposite of the loading process. Make sure when you open the outer shell door that the cylinder has come to a complete stop and all switches are de-energized. You are now ready to line up the cylinder doors with the outer shell door for unloading purposes. CAUTION: NEVER stick any part of your hand or arm inside the shell door if any of the washer extractor controls are energized. After unloading the freshly laundered clothing, it should be routed to the next processing station and the presorted and weighed soiled laundry loaded. The clean laundry should be routed swiftly to prevent it getting mixed up with other laundry. It is either routed to the press deck for processing on the presses or flatwork ironer or placed in the dryer for drying.

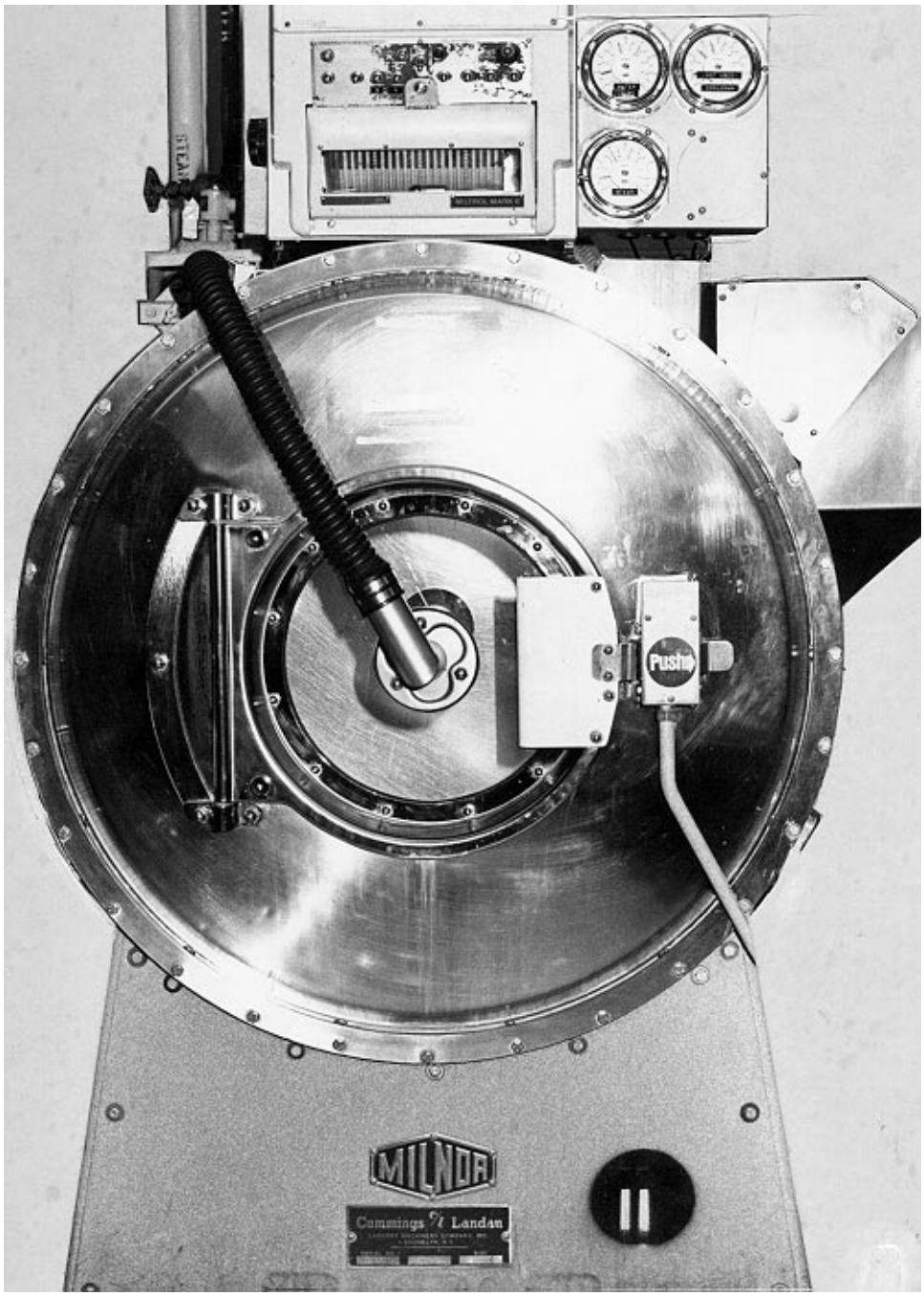

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Figure 5-20.-Milnor washer extractor, 60 pound.

OPERATION OF THE PELLERIN MILNOR WASHER EXTRACTOR

A 60-pound Milnor washer extractor is illustrated in figure 5-20. Like the Dyna Wash it is fully automatic, saving the operator the trouble of manual operation. The operating procedures are different from the Dyna Wash and you should be familiar with them.

MILNOR CONTROLS AND INDICATORS

The control system on the Milner looks complicated; however, it is quite simple and easy

to understand. The programmer controls and indicators are shown in figure 5-21. The door to the programmer is open so you can see the controls on the inside. Machine controls are located near the supply injector; as we discuss the controls, follow along on the illustration.

1. Master switch—This switch (No. 1) controls power to the machine and has three positions:

MANUAL—machine functions controlled by switch settings

OFF—power off

FORMULA—machine operations controlled by timer and precut program chart

2. Motor switch—The motor switch (No. 2) controls power to wash, drain, and extract motors. It also has three settings:

WASH formula-washer operates in either auto or manual mode

EXTRACT—this powers extract motor in manual mode

OFF—power to wash, drain, and extract motors de-energized

3. Temperature control switches (Nos. 3 and 4)—These switches control water temperature. They have three settings for each switch:

ON—used during manual mode to control preset temperature

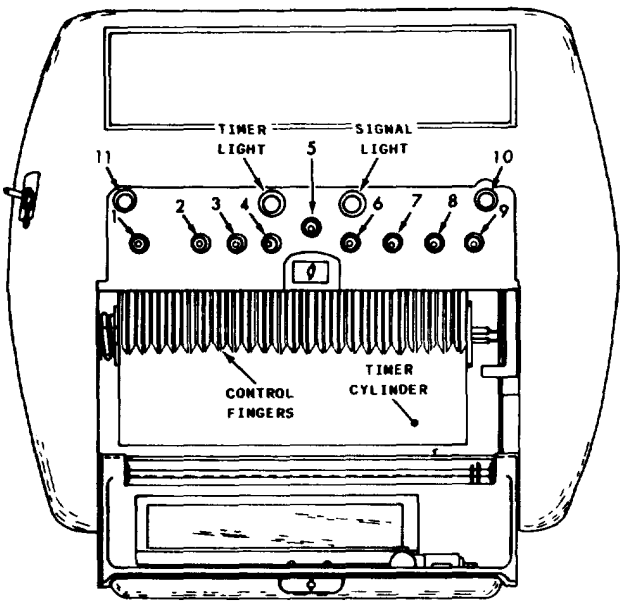
OFF—no temperature control

FORMULA—temperature automatically maintained according to the program chart

4. Signal switch (No. 5)—This switch is used to cancel and signal what has been called for on the program chart and allow the Milnor motor to resume operation.

5. Drain (No. 6)—The drain has three positions: OPEN, SHUT, or FORMULA. In the FORMULA position the drain opens or closes according to the formula.

6. Water level switch (No. 7)—This switch has three positions: HIGH, LOW, or AUTO. The



1 MASTER SWITCH
2 MOTOR SWITCH
3 TEMPERATURE NO. 1 SWITCH
4 TEMPERATURE NO. 2 SWITCH
5 SIGNAL SWITCH
6 DRAIN SWITCH
7 WATER LEVEL SWITCH
8 HOT WATER SWITCH
9 COLD WATER SWITCH
10 START BUTTON
11 STOP BUTTON

Figure 5-21.—Milnor controls and indicators.

HIGH and LOW positions are used in manual mode while the AUTO position admits water according to the program chart.

7. Hot and cold water switches (Nos. 8 and 9)—These switches control opening and closing of hot and cold water. Both switches have three positions:

IN—opens hot or cold in manual mode

OFF—closes hot or cold in manual mode

AUTO—opens and closes either valve according to the program chart.

8. Signal and timer lights—Signal light is lit when machine requires operator attention. The timer light is lit when the timer is in operation.

9. Thermometer—The thermometer automatically controls preset water temperatures

within the machine. The thermostat indicators include a:

black pointer—indicates actual water temperature,

green pointer—controls your lower temperature, and

yellow pointer—controls your higher temperature.

Your start (No. 10) and stop (No. 11) buttons are self-explanatory. The stop button can be used to shut down the machine quickly if necessary.

SAFETY FEATURES

The Milnor has many safety devices that you should become familiar with. These safety features should be listed on a locally prepared document and posted near the machine. The door to the washer has an interlock that prevents the door from opening during operation. The machine will also cut off automatically if the air pressure is too low. The air pressure should be a minimum of 80 pounds for extract or a brake air pressure switch will prevent the machine from entering extract.

AUTOMATIC OPERATIONS

Before you operate the Milnor, perform the preoperational checks as outlined for the Dyna Wash and load the machine to the rated capacity.

1. Turn cylinder knob until formula chart fingers approach start.
2. Close and lock the door, add supplies to automatic dispenser.
3. Place all switches in the AUTO or FORMULA position.
4. Turn cylinder knob until interior light goes on in the formula chart.
5. Push start button.
6. After cycles complete a signal will sound, push stop button, open door.
7. Unload machine.

MANUAL OPERATION

Manual operation should only be used when the automatic timer is inoperative. Manual operation slows down workflow, causes less than desirable washing results, and ties up laundry personnel as they will be busy attending machine controls. The following steps should be followed:

1. Load machine to rated capacity.

2. Turn formula chart to uncut position.

3. Close and lock the door.

4. Set your switches to the following positions:

Master switch—MANUAL setting

Motor switch—WASH-FORMULA setting

Temperature control—for first cycle put temperature 2 switch to ON and temperature 1 switch to OFF

Drain switch—shut

Hot water switch—in

Cold water switch—in

5. Push start button and washer will fill with water of selected temperature. You can fill washer to desired water level and shut off the water by placing the hot and cold water switches to OFF.

6. Add supplies following applicable wash formula.

7. Switch drain to open and allow water to empty at the end of each cycle.

8. Energize the extract motor by switching the motor switch to EXTRACT after draining the water from the flush suds cycle. Leave drain open for this procedure.

9. Shut off extract, close drain after 1 minute.

10. Complete the next two rinse cycles.

11. Switch temperature 1 to ON and temperature 2 to OFF on the third rinse.

12. Turn water switches on, fill washer to desired level, and shut water switches off.

13. Add sour and starch as required.

14. Open drain at end of final rinse. Allow water to empty and energize extract.

15. Push the off button and turn all switches off at the end of the extract. Allow the cylinder

to stop and unload. Figure 5-22 shows a laundryman unloading a Milnor.

MAINTENANCE OF THE SHIPBOARD WASHER EXTRACTORS

The washer extractor is a very important and expensive piece of equipment. If it breaks down, time and money are consumed, perhaps unnecessarily, and the ship's company may be subjected to inconveniences and unsanitary living conditions. Therefore, too much emphasis cannot be placed on the proper care and maintenance of the washing machine.

The senior laundry petty officer and all operators are responsible for the care of washer extractors. The washer should be kept as clean inside and outside as possible. Soap solutions and hot water help to keep the inside clean and sanitary, but scum and other accumulations should be removed daily from the exterior.

An oxalic acid solution made by dissolving 1/2 pound of oxalic acid crystals in a gallon of water can be used to keep the outside of the tub clean and bright. Use a rag or brush to apply the solution. Rub vigorously and then rinse with clean water. A fine abrasive powder, such as pumice

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Figure 5-22.-Laundryman unloading the Milnor washer extractor.

stone, sprinkled on the damp cloth helps to remove grease and film from the tub. Scouring powder and a brush vigorously applied also work quite well.

As an operator, be alert for mechanical problems that may occur between maintenance checks such as the following:

- Loose latches on cylinder doors
- Leaky valves
- Extractor brake working improperly
- Thermostat working improperly
- Switches inoperative
- Timer operating improperly
- Extract engages roughly
- Water levels incorrect
- Safety features inoperative

Laundry personnel should not attempt mechanical or electrical maintenance. Remember, hands off electrical wiring in the electrical box. All mechanical or electrical maintenance must be done by qualified shipboard maintenance personnel.

TUMBLER DRYER

Figure 5-23 illustrates a group of tumbler dryers. The Navy mainly uses the 50-pound

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Figure 5-23.-Battery of tumble dryers.

Cissel-type dryer. In figure 5-24 the door of the tumbler dryer is open and part of the perforated basket can be seen inside, while a laundryman loads the tumbler dryer. Each drying tumbler has an exhaust fan enclosed in the bottom of the machine. This fan exhausts air from the tumbler enclosure, and outside air then rushes through the open sides of the heat coil box, where it is heated by the steam coils. The air then enters the basket through the perforations and dries the clothes. The exhaust fan removes the air from the basket and forces it out through an exhaust duct.

CONTROLS AND INDICATORS

Figure 5-25 illustrates the controls and indicators on the tumbler dryer. Most of these controls are self-explanatory; however, check the

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Figure 5-24.-Laundryman loading the tumbler dryer.

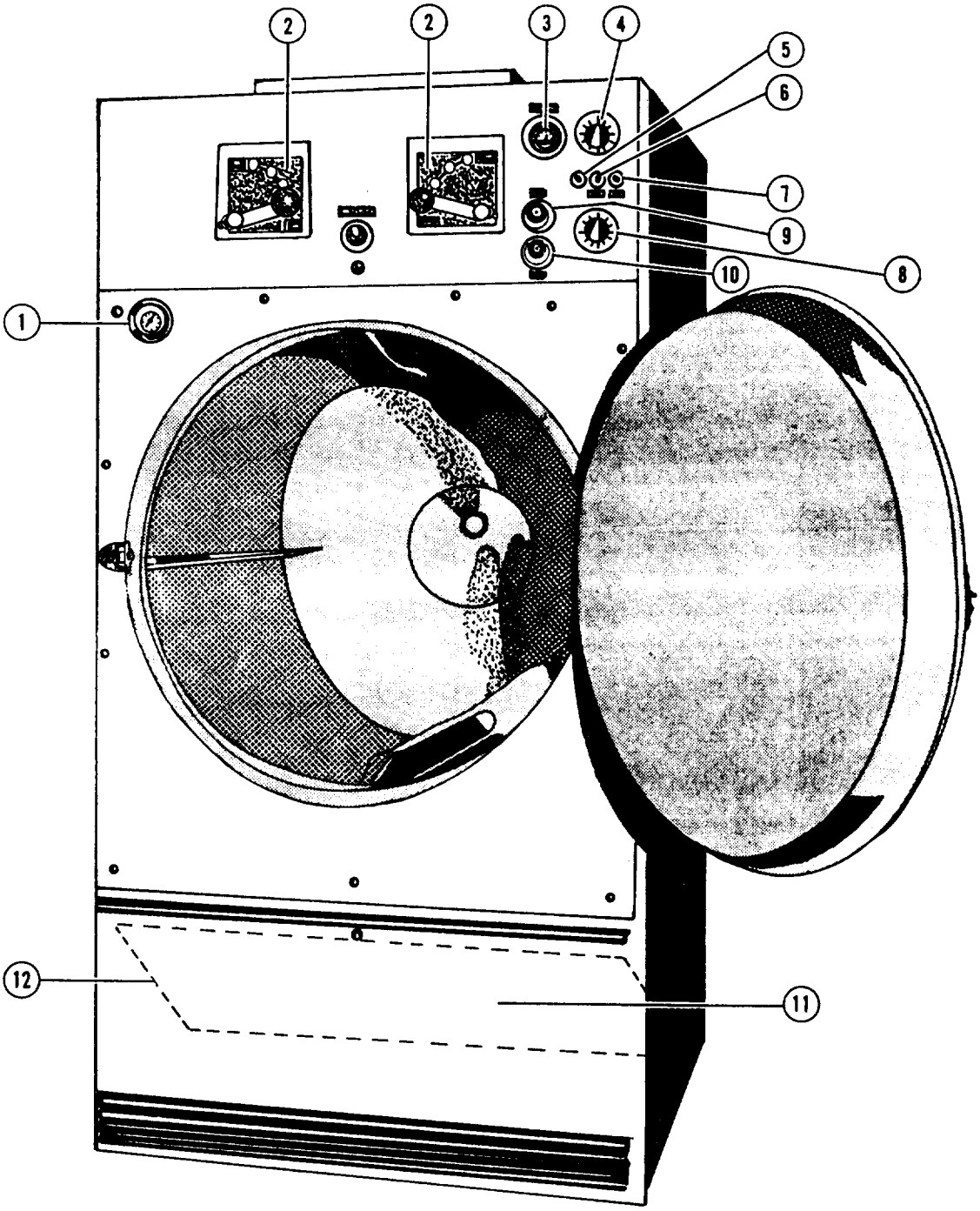

Figure 5-25.—Tumbler dryer controls and indicators.

ITEM NUMBER	NAME	DESCRIPTION
1	Thermometer	Designates basket outlet temperature
2	Dampers	Regulates basket inlet temperature
3	Temperature regulator	Regulates basket outlet temperature
4	Cooling timer	Regulates cool-down time 0 to 15 minutes
5	Temperature light	Glows when steam is on
6	Cooling light	Glows during cool-down cycle
7	Drying light	Glows during drying cycle
8	Drying timer	Regulates drying time
9	Start button (black)	Starts dryer
10	Stop button (red)	Stops dryer
11	Lint trapdoor	Access to lint screen
12	Lint screen	Collects lint

Figure 5-26.—Tumbler dryer controls and indicator chart.

chart in figure 5-26 for the name of each control or indicator and its function.

PRIMARY LINT TRAPS

The primary lint trap is located in the front of the machine inside the lower lint trapdoor. Figure 5-27 illustrates a laundryman cleaning the lint trap and lower casing. Cleaning the primary lint trap and lower casing should be done once every 2 hours. Proper cleaning of the lint trap eliminates airflow restrictions which increase the time for drying each load and create possible fire hazards.

SECONDARY LINT TRAPS

Secondary lint traps help to cut down the buildup of lint in ducting. Air that has gone through the primary lint trap and left the dryer still may have lint in it. This lint and debris build up in the ducting blocking airflow. Ducts that have long runs and elbows attract lint that gets stuck and builds up creating back pressure and a possible fire hazard. Inspection and cleaning of these vents and ducts should be done monthly. Secondary lint traps can be installed by procuring dryer lint trap bags and installing them as indicated in figure 5-28. Lint bags are available

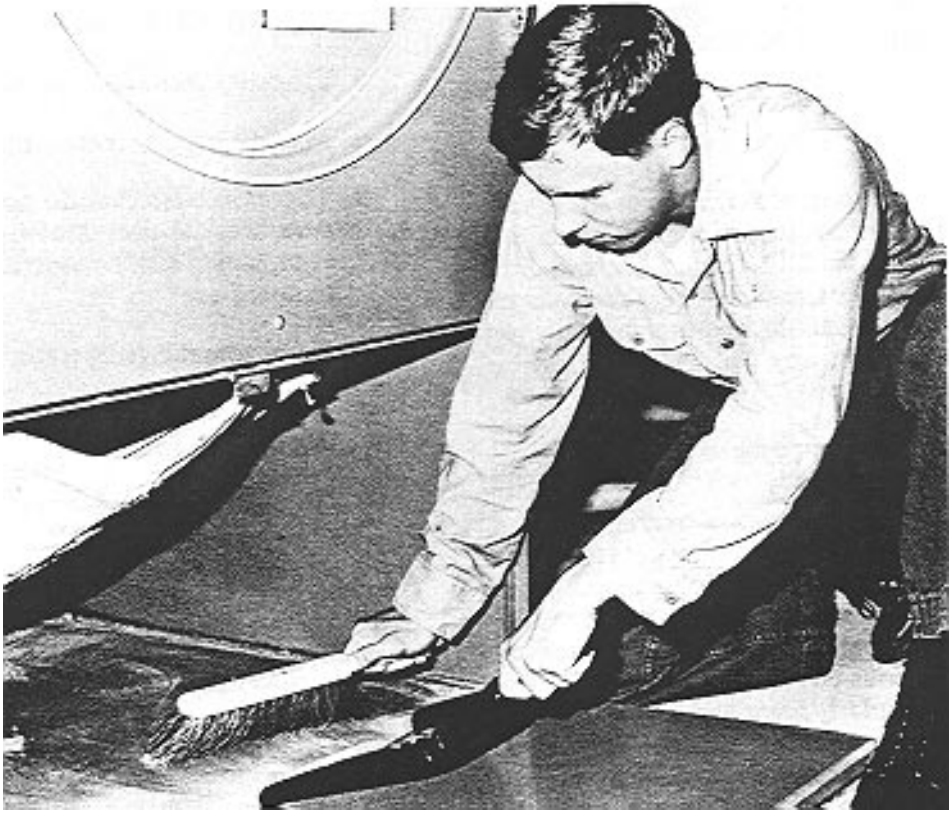

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Figure 5-27.-Laundryman cleaning the primary lint trap.

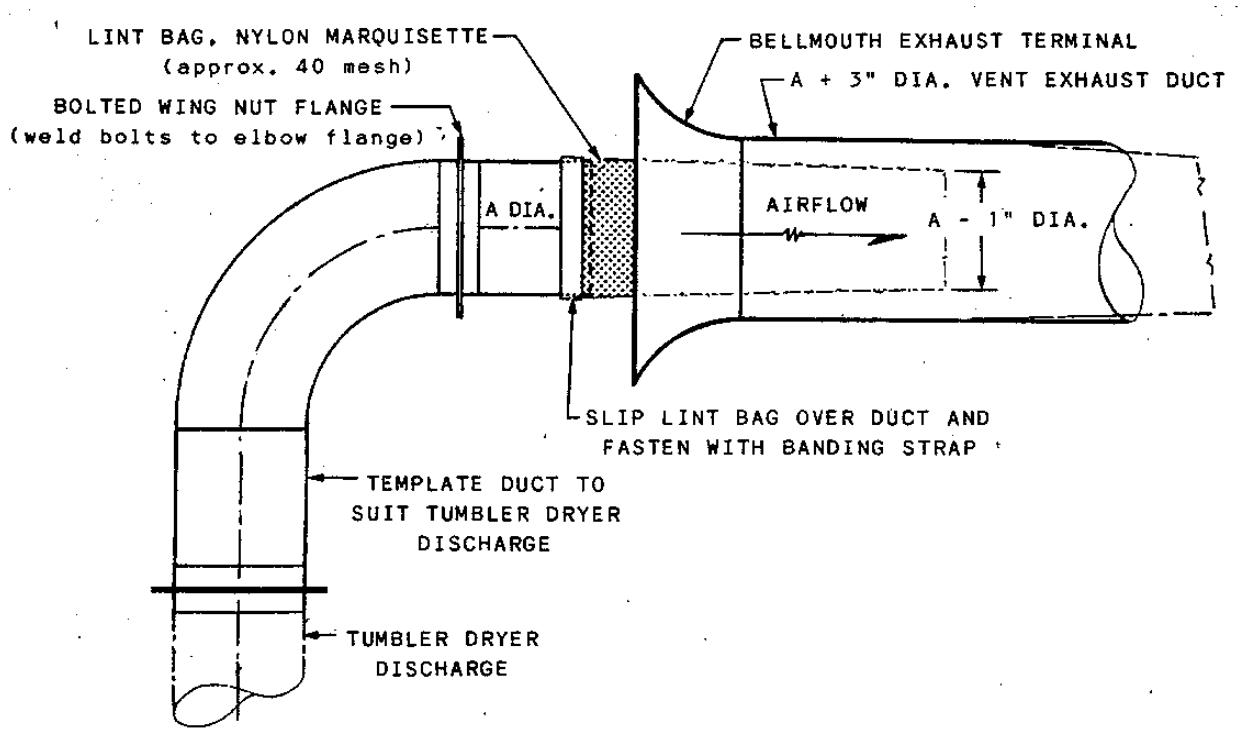

Figure 5-28.-Secondary lint trap installation.

through sources contained in the *Ship's Store Contract Bulletin.* These bags are easy to install and remove and should be cleaned once every 4 hours.

STEAM COILS

Steam coils are located at the top of the dryer. The configuration of steam coils as heat exchangers makes them collectors of lint and dirt, which slows down the transfer of heat and reduces airflow. Steam coils should be examined daily for the presence of lint; any lint present must be removed.

TUMBLER DRYER FIRES

Before we get into the actual operation of the tumbler dryer, let's discuss the potential fire hazards involved in drying clothing and other textile materials in standard shipboard tumbler dryers. The principal cause of shipboard laundry fires is spontaneous combustion of residual soil in clothing (particularly paint and drying or edible oils) and/or polymeric elastic waistband materials. Most laundry dryer fires are caused by human error or negligence. Many of the causes are listed below:

- Leaving clothing or linen unattended in the dryer
- Not properly washing, rinsing, or extracting clothes
- Overdrying because of imbalance in loading (heavy items included with light items)
- Placing divisional laundry bags in the dryer
- Not cooling down dryer loads for 10 minutes with dampers set to deliver room temperature after drying
- Improper cleaning of primary and secondary lint traps
- Improper use of the timer on the dryer
- Unclean steam coils on the dryer

In addition, operators must be familiar with safety devices and report faulty equipment to maintenance personnel. Investigations of shipboard fires have revealed the following conditions in laundry tumbler dryer safety devices:

- Clogged, damaged, or missing lint traps
- Missing or inoperative thermometers
- Thermometers that do not indicate temperatures above 220°F, although the equipment can be operated above this temperature
- No automatic temperature control
- No automatic timing device to control drying time
- No automatic cool-down cycle
- No fire sensing and smothering device

When the above conditions exist on board your ship, be extra careful when operating the tumbler dryer.

A Prevent Laundry Dryer and Hamper Fires placard (fig. 5-29) should be posted on the front of each dryer. Placards are available through the supply system and should be mounted on the door of every dryer.

OPERATING THE TUMBLER DRYER

The procedures for operation of the dryer are as follows:

1. Load the dryer, not exceeding rated capacity.
2. Set dampers to the desired position. Most loads can run in the HOT position.
3. Set thermometer regulator to desired temperature (140°-160°F). The actual dryer temperature will be indicated on the thermometer.
4. Set drying time for approximately 20 minutes.
5. Set the cool-down timer for 10 minutes to cool the load to approximately 120°F during the cool-down cycle.
6. Push the start button. Drying time depends upon steam condition, weight and texture of load, and the amount of moisture left in the load after it was extracted. Standard tumbler performance should not exceed 1 minute per pound (dry weight). NOTE: During the cool-down cycle, move dampers to the cool position.

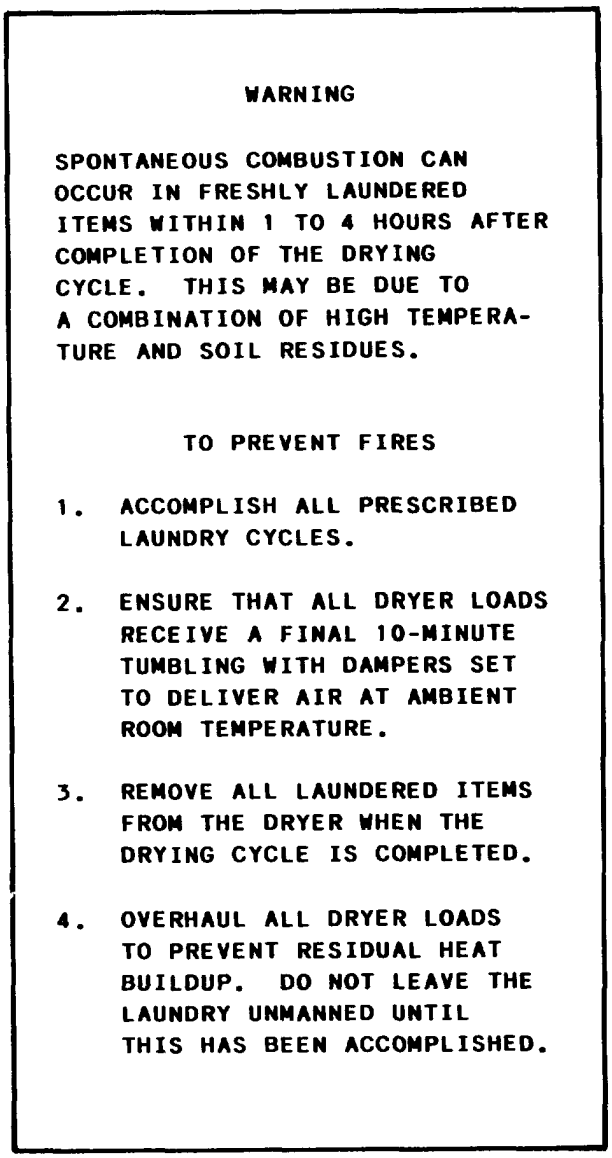

Figure 5-29.—Prevent Laundry Dryer and Hamper Fires placard.

7. Remove clothes from the dryer.

Never allow laundered items to remain in the dryer after completion of the drying cycle. Laundry personnel should store freshly dried clothing loosely and remain in the laundry after the last dryer load to make sure there is no residual buildup of heat in the clothing.

DRYING TECHNIQUES

To avoid loss of items and production, perform all drying operations by lot. Keep each lot in its proper sequence and maintain an identification marker with each lot during the tumbling operation. Exercise the greatest care to prevent any mixing of lots. Items requiring approximately the same drying time should be processed together, when possible.

Do not overload tumbler dryers as tumblers are more sensitive to overloading than any other type of equipment used in the Navy laundry. Overloading retards drying time, produces wrinkled work, and accelerates wear on the equipment. No set time can be prescribed for drying a load in a tumbler because drying time is dependent upon steam conditions, weight of the load, texture and type of material, and the amount of moisture left in the work after extraction. However, the maximum drying time for an average load of cotton items in a 50-pound tumbler dryer is approximately 20 to 25 minutes. Under ideal conditions, the drying time required for the same load may even be less. Very heavy cottons require a slightly longer drying time. Drying times used should be checked frequently, and, if longer periods are required, the dryer may have to be checked by maintenance personnel to make sure there are no problems. Tumble drying of washed synthetic or synthetic blend clothes and linens properly carried out can minimize and/or eliminate the need for pressing of the items. When drying linen or this type of clothing do the following:

1. In all instances the tumbler dryer must not be overloaded in order to allow adequate tumbling action for wrinkle removal. Three-quarters of the rated dryer capacity is recommended.

2. Hot tumble drying temperatures should not be used. Exhaust-air temperature should be set at a medium setting (between 140° to 160°F). Drying time varies with the nature and size of the load, but items containing a synthetic or high percentages of synthetics in blends dry much faster than similar 100 percent cotton items. Items should not remain in the tumbler when it is not in motion.

3. Permanent press, synthetic, and synthetic blend wearing apparel and linens, when removed from the dryer immediately after cool down and either placed on a hanger or folded, should be suitable for use without ironing. Processing of linens in this manner can help cut down the workload for flatwork ironers.

Heavy items scheduled for pressing must be preconditioned (partially dried) in tumblers for

approximately 5 to 8 minutes before being pressed. This will make pressing easier; however, preconditioned items should not be overdried before being removed from tumblers. When overdrying takes place, the difficulty of pressing these items is increased and the quality of the finished item is impaired.

Remove tumbled laundry from tumblers by hand, place in trucks or baskets provided for this purpose, and deliver to the next processing section. Care must be taken that lots are not mixed and that they are delivered in the sequence in which received. It is important that processed workloads be delivered to the next processing section as soon as possible. This is of particular importance to preconditioned workloads since delays will cause the work to dry excessively and will affect the efficiency of the pressing operation. Preconditioned workloads should be covered with dampened cloths or nets to help preserve their moisture content. Unload all tumblers when the laundry is shut down for the day. Check for heat content of all unfolded rough-dry work that is to remain in the laundry overnight. Spread items out for airing if they are still hot.

GENERAL MAINTENANCE

The majority of all dryer maintenance is done by the engineering department. You should always keep your tumbler dryer free of lint. Lint is a fire hazard, besides, clothes will not dry properly unless the lint screen is clean enough to allow free passage of air through the machine. If dryer lint traps become worn or torn you should replace them. Always clean the lint screen casing when you clean the lint screen.

Use a vacuum cleaner or a compressed air jet to remove lint deposits from heater chambers and air passages in the dryer. If lint is left to accumulate, spontaneous heating may result, or the flow of air will be restricted.

Other maintenance you can perform on the drying tumbler includes the following:

- Checking switches and dampers to determine how well they work
- Keeping nuts and screws tight
- Reporting maintenance requirements to your supervisor promptly
- Checking the tension of drive belts

Screws, nails, pins, and melted plastic that have solidified will occasionally clog the perforations in the basket mesh creating operating hazards. Baskets should be checked and cleaned daily.

The engineering department should check the tumbler dryer at regular intervals for accumulations of lint in air passages and the lint box, faulty opening and closing of the dampers, leaks in the steam valves or lines, and the general condition of the machine. Engineering personnel should lubricate the tumbler and make major overhauls according to the recommendations of the manufacturer.

FLATWORK IRONER

The main items in the laundry processed through the flatwork ironer aboard ship are bed linens and tablecloths. The flatwork ironer is installed on ships that have sufficient requirement for this piece of equipment. On this ironer (sometimes called a mangle) the flatwork is ironed damp just as it comes from the washer extractor. Such things as handkerchiefs, hand towels, aprons, undershirts, and white trousers can also be finished on the flatwork ironer.

Items of laundry flatwork are currently being manufactured from synthetic, synthetic blend, and cotton blend fabrics. These items can be successfully finished without pressing in a tumbler dryer. Use of dryers in this connection can reduce the press deck load where an ironer is not available. Where an ironer is available, its use reduces the drying tumbler workload and produces a better finish than rough drying.

On ships without flatwork ironers, some of the flatwork, such as table linen, is pressed on a laundry press of the type described in the next section. The rest of the work is rough dried.

You will probably serve at some time on a ship that has a flatwork ironer and, therefore, will be expected to know how to operate one correctly.

IRONER CONTROLS

Currently flatwork ironers used on Navy ships have either 60-inch or 85-inch cylinders. The flatwork ironer consists of a steam-heated cylinder against which the flatwork is pressed by means of three padded pressure rolls. The work is carried into the ironer on feed ribbons that lead the work over the cylinder. At the rear an apron or ribbon presses the work against the underside of the

cylinder and returns it to the front. Steam to heat the cylinder is provided by the ship's steam line, and the motor is electrically driven.

The ironer parts that you are mainly concerned with are shown in figure 5-30. The one part not shown that is very important is the emergency stop button located in the right-hand rear of the machine. We will briefly describe the main parts so you can get a broad understanding of the flatwork ironer.

- The return ribbons hold flatwork in contact with the heated cylinder until discharge.
- The delivery table catches all discharged material.
- The finger guard prevents the hands of the operator from getting near the padded pressure rolls.
- The padded rolls smooth and flatten fabric to the heated cylinder.
- The feed ribbons feed flatwork.
- The feed ribbon drive roll turns the feed ribbons.
- The speed control lever controls the speed in which flatwork is passed through the ironer.
- The foot pedal engages the compression roll.

SAFETY PRECAUTIONS

Before discussing operation of the flatwork ironer, we need to discuss safety precautions that apply to this equipment. Do not try to remove jammed linen or material while the machine is running. Serious injury to the operator or damage to the ironer can occur if you attempt to reposition or unjam linen or service the ironer while it is running. If something is jammed, shut the ironer off at the power source before trying to remove it. If the ironer has compression roll levers, learn how these levers work and always use them to

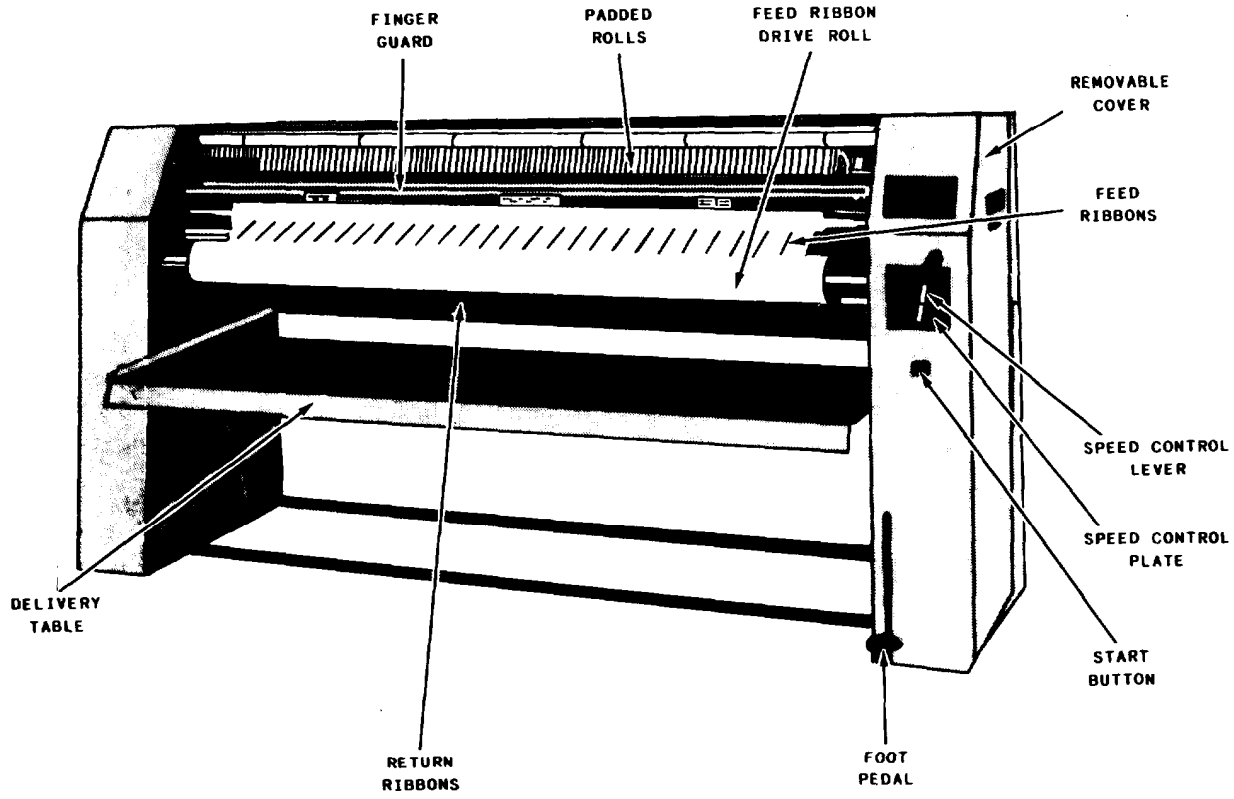

Figure 5-30.—Flatwork ironer basic parts.

fully raise padded rolls before you shut off the power, allow the ironer to cool, and try to remove jammed linen or service the ironer. Always avoid contact with heated parts.

Never reach over, under, or behind the safety finger guard or into any area near the heated roll or moving parts without first shutting off the ironer at the power source. If you break this rule, you are taking the chance of getting caught in the rolls or ribbons and possibly incurring serious injury from the ironer's heat or pressure. This rule should be followed whether you are working at the front, side, or rear of the ironer.

Check the operation of the safety finger guard at the beginning of every shift. Touching the safety finger guard should activate a switch that will stop the ironer. If this safety feature is not working properly, shut off the ironer at the power source and notify your laundry supervisor.

Do not try to operate the ironer until the safety finger guard is repaired and working properly. Always make sure that all other safety guards and end panels are in place before operating the ironer.

ALWAYS make sure that all ribbons and tapes are in place and working properly. They are designed to hold linen so it is properly ironed and to prevent jamming. Never relace or adjust tapes, ribbons, or padding while ironer is running. Keeping the ironer well waxed also helps to prevent jams. DO NOT iron anything except flatwork because damage to the ironer or injury can result. The ironer is designed for processing flatwork only. DO NOT stand, sit, or kneel on any shelf at the front or rear of the ironer. These are not designed to support a person's weight.

PROTECT yourself and your fellow workers by making sure that everyone follows these simple rules. Read and follow all safety labels. Learn which parts are hot and how the ironer works—including how to shut it off in an emergency. Do not get close to heated or moving parts or wear loose clothing or jewelry when near the ironer. If you see people breaking these rules, help them prevent serious injury to themselves or others by reminding them to follow the rules and shut the ironer off first. When in doubt contact the engineering department. Do not try to make mechanical repairs on this equipment. Only qualified personnel should service this equipment.

OPERATION OF THE FLATWORK IRONER

Before you start and operate the flatwork ironer, make sure you fully understand the use of each control and the equipment safety precautions. The compression roll should be disengaged (top position) and flatwork ready to be fed into the machine. Follow these steps:

1. Start ironer by pressing the green button.
2. Set to the lowest speed by adjusting the speed control handle. NOTE: NEVER change the speed of the ironer when the ironer is on or you may damage the variable speed mechanism.
3. Open the steam supply valve slowly. Open the valve one-half a turn at first and gradually allow steam to enter the cylinder. Continue to open the valve slowly until opened all the way. The steam pressure for the ironer should be about 100 psi. It normally takes about 30 minutes to fully heat the cylinder.
4. Engage the compression roll and wax the ironer (see waxing the ironer).
5. Start feeding the flatwork. You may increase speed to meet your particular need. During normal operation there are two locations in which the ironer maybe stopped, the red finger safety guard and red emergency stop button.
6. To stop the ironer at the end of your work, close the steam supply, raise the compression roll, and allow the machine to run without steam for 20 to 30 minutes. This procedure allows all components to properly cool before the power is shut off. This cool-down procedure also prevents damage to return ribbons and protects the compression roll padding from being flattened.

FEEDING THE FLATWORK IRONER

The flatwork ironer was designed to finish all cotton or blended flatwork such as tablecloths, napkins, towels, and linen. It is not designed to process nylon or rubberized fabrics. Do not try to process these items as it may result in fire or damage to ribbons or cylinder surface. When leaving the ironer for more than 5 minutes, always raise the compression roll.

To help ease feeding, you should shake a quantity of work out and lay it over the edge of the laundry basket or on a table within easy reach.

Check on the amount of dampness in the pieces before feeding. The piece should come out of the ironer dry, and to accomplish this, some adjustment of the extracting time may be necessary. If the pieces are not extracted long enough they will come out of the ironer still damp; and if extracted too long they will come out with a rough, dry appearance. Do not let flatwork sit around in the laundry baskets after it is removed

from the extractor. Iron flatwork immediately while it is at the proper stage of dampness, or cover it with plastic or other material to retain a proper amount of moisture. Feed flatwork into the ironer WRONG SIDE UP, so that the smooth or "right" side comes into contact with the cylinder. This gives a smooth finish to the outside of the flatwork. Fold the smooth side out as the work comes from the machine.

Large Items

Two persons should feed large items as shown in figure 5-31. To start the piece through the ironer, each person grasps a top corner with the hand nearest the ironer, stretching the forward edge between them so that it enters the machine straight and smooth. Each person uses the other hand to straighten the front edge as it enters the ironer. After the feed roll ribbons pick up the spread, they use both hands to hold the spread firm and straight as it passes through the ironer. As the spread comes out, the personnel take it by the edges again and fold it.

Small Items

When you feed small articles into the flatwork ironer, use the entire length of the cylinder, If you continually feed small items into the ironer at one or two spots, the padding on the pressure rolls wears more at these points and your work comes out unsatisfactory. The only way to correct this difficulty is to repad the rolls.

CARE AND MAINTENANCE

Maintenance of the flatwork ironer is the responsibility of engineering personnel. ONLY trained maintenance personnel should do any work on the ironer. Instructions for changing

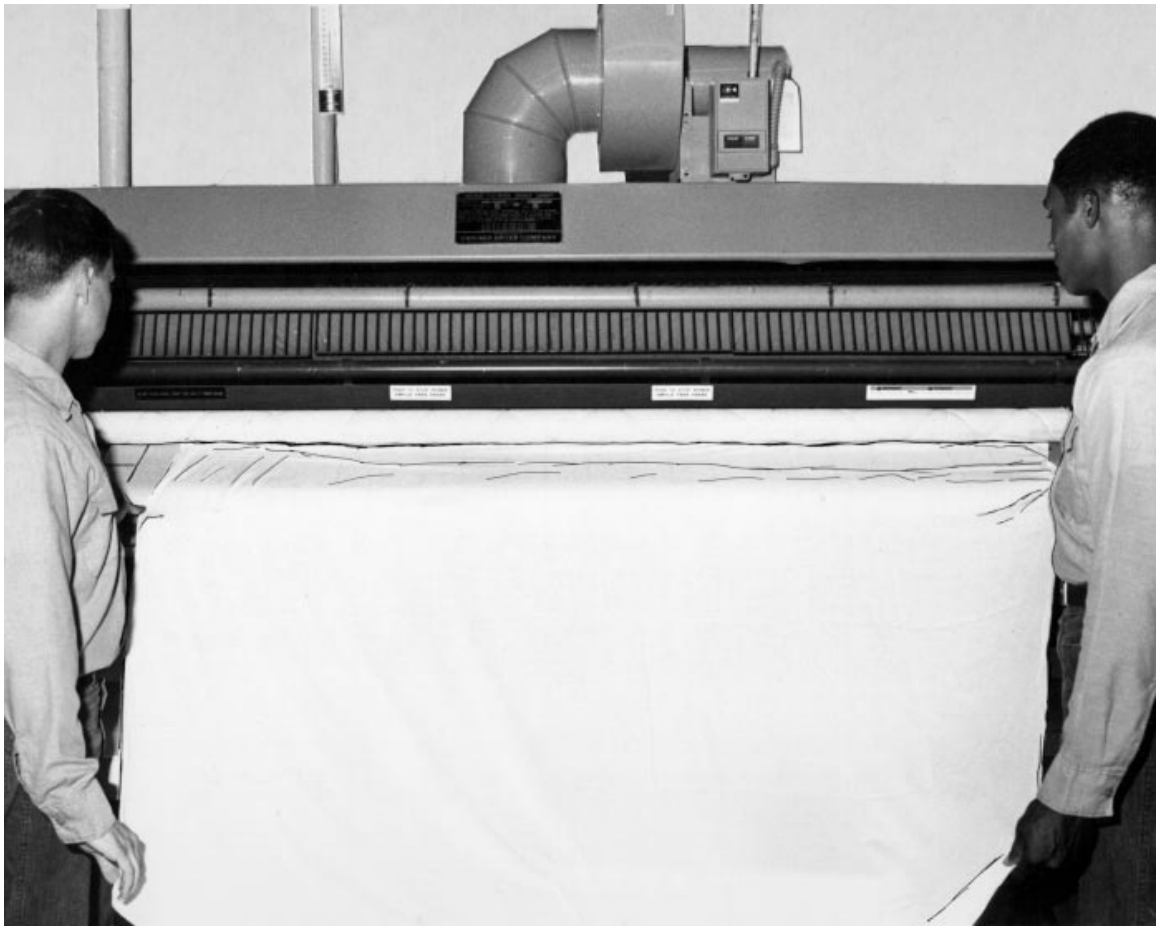

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Figure 5-31.-Laundry personnel using the flatwork ironer.

ribbons, aprons, friction material on ribbon drive rolls, pads, and covers are contained in the manufacturer's technical manual. Laundry personnel should do this maintenance ONLY after being properly trained in the correct procedures for performing this work.

Waxing the Ironer

To produce a smooth finish on flatwork, prolong ribbon life, and prevent linen from sticking to the heated cylinder, laundry personnel need to wax the ironer each morning or after every 6 to 8 hours of use. You should use the wax recommended by the manufacturer. Cut a strip of cloth about 3 feet wide and as long as the cylinder. Sprinkle half of the strip evenly with wax (paraffin) and fold the other half over it. Hold the cloth tight and feed the closed or folded end into the ironer. Run the paraffined cloth through the ironer several times. Use caution when doing this as the wax may become very hot. Also, be careful not to overwax as this causes the return ribbon and drive material to deteriorate. This cloth may be reused as long as the wax lasts. Never sprinkle wax directly onto the ironer.

Ironer Ribbons

Ironer ribbons need to be replaced when they become worn, discolored, or torn. After they have been replaced by trained maintenance personnel, laundry personnel should thoroughly wax the ironer as this aids the newer ribbons in their initial action against the heated rolls.

Friction Material on Return Ribbon Drive Roll

The return ribbon drive roll drives the ironer return ribbons. This return ribbon drive roll is located at the front of the ironer underneath the white canvas feed ribbons. For the ironer return ribbons to be driven properly, the ribbon drive roll must be properly covered with friction material. Special 6-inch-wide friction material wound around the drive roll is used for this purpose. When this material becomes smooth or if it should become worn off the roll, it must be replaced with new material. If this material is not replaced, the ironer return ribbons will not be driven at the proper speed and wrinkling and other problems can result. Return ribbons normally run faster than the heated roll and the padded compression roll. If linens should have a tendency to jam and wrinkle while under the return ribbons, that is usually an indication that the ribbons are not running at the proper speed and the friction material may need replacement. You should contact maintenance personnel to check and replace this friction material if necessary.

Changing Combination Pads and Covers

When the padding on the ironer pressure rolls becomes scorched, burned, or when resiliency is lost they should be changed. It is very dangerous to install new padding to the ironer and must be done with a great deal of care because your hands come close to moving rolls. Only experienced maintenance personnel should install the padding. After the padding is installed, the operator should make sure all safety guards are reinstalled by maintenance personnel and work properly. You should also run a wax cloth through the ironer two or three times.

If the padding at one end of an ironer is slightly larger in size than the other end, pass some heavy bath towels or other thick work through at that end. This should compress the padding sufficiently so that the padding is the same diameter across the entire width of the roll. There should be a minimum of pressure on the padding, This allows maximum padding life. Do not try to maximize pressure that is put on the padding. The ironer will not dry better because of extra pressure. It simply wears out the padding faster, As the padding gets older, it compresses slightly.

LAUNDRY PRESSING AND FINISHING

The press deck area of the laundry processes all clothing received from washing or tumbling operations that cannot be processed through the flatwork ironer.

Uniform items made of synthetic or synthetic blends may be successfully finished by tumble drying if the procedures outlined in the washing and drying sections are followed. Other cotton uniform coats, shirts, and trousers must be pressed before they are worn. Laundry personnel working on the press deck must know how to operate a press and press clothing correctly. This requires practice and repetition of standard press lays for shirts and trousers. It also requires knowing the basics of the laundry press operation and following all safety precautions.

LAUNDRY PRESSES

A laundry press is shown in figure 5-32. A laundry press consists of a stationary padded buck fastened to a rigid metal frame. The head of the press is made of polished metal and is lowered by a system operated by compressed air. Live steam is admitted to the head to heat it, and the condensed steam is carried away by a drainpipe. A steam trap prevents live steam from entering the drainage system. A table for holding a garment undergoing pressing is secured to the frame of the press beneath the buck.

The buck of a press is your worktable. The size and shape of the buck may vary according to the function for which it was designed. The buck is padded in a specific way for satisfactory pressing. This padding must be in good condition at all times and must be changed when scorched, uneven, or worn. The amount and condition of padding affect head pressure, and you must readjust this pressure to get the amount required for good pressing.

TYPES OF LAUNDRY PRESSES

Figure 5-33 shows the many presses used afloat. There are several models used afloat; however, the operation of them is basically the same. The following are the basic types of presses installed aboard ship:

1. Tapered head—for general pressing of wearing apparel
2. Rectangular head—for general pressing of wearing apparel and flatwork items
3. Triple head—for pressing shirt collars and cuffs simultaneously
4. Sleeve press—for pressing sleeves of shirts

In addition to presses you have your spray guns attached to press units. A spray gun is essential for dampening garments that are too dry for good pressing. Cold water is used to dampen the garments. A small amount of water sprayed on the last part of a garment being pressed is necessary to compensate for the moisture lost while the other parts of the garment were pressed on the hot press.

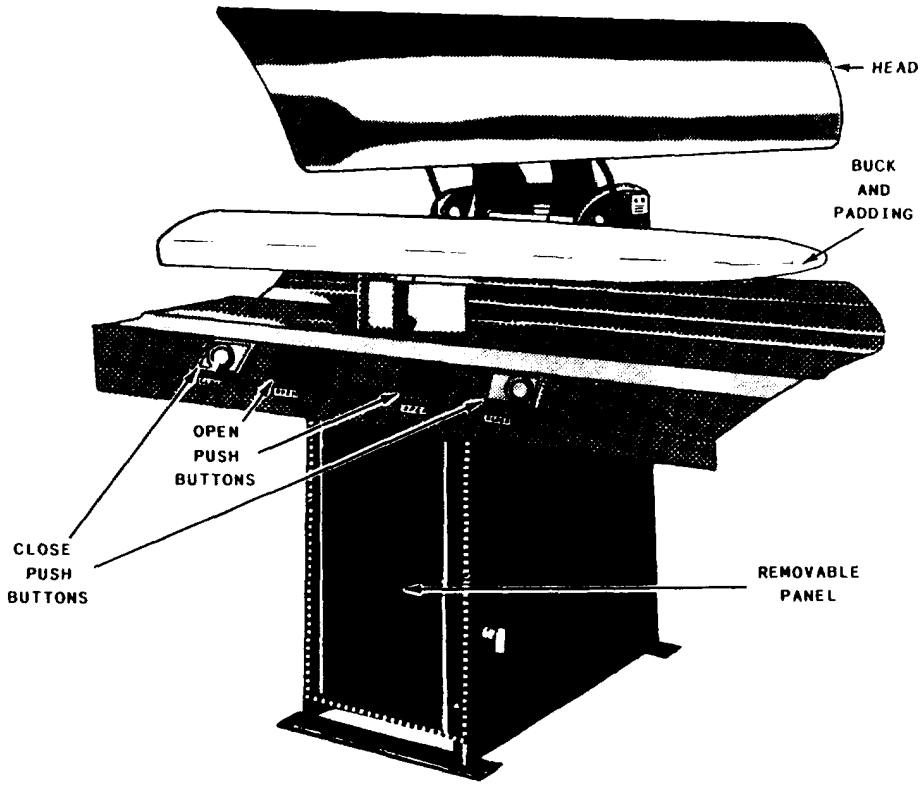

Figure 5-32.—Utility laundry press basic parts.

ITEM SEQ NO.	FUNCTIONAL DESCRIPTION	SPECIFICATION PROCUREMENT REQ'MTS	MANUFACTURE AND MODEL NO.
		LAUNDRY PRESSES	
15	Utility Press, 54-inch	MIL-L-19493 Type I, Class C	Ajax Model 554-C
16	Linen Press, 54-inch	MIL-L-19493 Type I, Class D	Ajax Model 1854-C
17	Pants Topper Press, 36-inch	MIL-L-19493 Type I, Class B	Ajax Model 3612-C
18	Collar/Cuff/Yoke Press	MIL-L-19493 Type I, Class G	Ajax Model SCY
19	Utility Press, 54-inch	MIL-L-19493 Type I, Class C	Forenta Model 53 VAN
20	Collar/Cuff/Yoke Press	MIL-L-19493 Type I, Class G	Forenta Model 27 VCY
21	Sleeve Press (Noncabinet Type)		Forenta Model 450 MIL
22	Utility Press, Small, 37-inch	MIL-L-19493 Type I, Class A	Forenta Model 37 VAN
23	Pants Topper Press, 36-inch	MIL-L-19493 Type I, Class B	Forenta Model 3516 VSN

Figure 5-33.—Laundry press listed for use aboard ship.

PRESS LAYOUTS

When two or more presses are placed together so that garments may be alternately pressed on each machine by one operator, the group of presses is called a unit.

The placement of presses within a unit, or the placement of units in the laundry, is called the layout of equipment. The layout of all laundry equipment in Navy ships is done by the Naval Sea Systems Command, and changes should not be made without prior approval.

Figure 5-34 illustrates a single operator station consisting of two utility presses and one pants topper press. On a large ship there maybe several of these stations as shown in figure 5-35.

47.81

Figure 5-34.-Laundry press single operator station.

43.82

Figure 5-35.-Several single operator stations.

OPERATION OF THE LAUNDRY PRESS

Presses are air operated and controlled by push buttons mounted flush with the front of the press table. The air buttons located on the front of the table are used for lowering, locking, and releasing the head. The two outside red buttons lower and lock the head. Both hands must be used to press both buttons at the same time. The release buttons are the two inside green buttons. The head can be released by depressing either the right or left inside release button.

Before you operate the press, examine the cover and padding before heating it. Then check the head pressure by inserting a bedding sheet leaving a portion exposed and trying to pull it out after the press is closed. The bedding sheet will resist all efforts to remove it and remain in place in all areas.

If the padding is bad, do not use the press until it is repadded. If the cover is unsatisfactory, replace it with a new one.

When you heat the laundry press, do it gradually. Turn the steam valve partially open for 20 minutes and then open it completely. The press is then ready for use.

The time required to press and dry a garment satisfactorily is dependent upon the following:

1. Type of material
2. Moisture in the material
3. Steam pressure (less than 100 psi will require longer time)
4. Effectiveness of the steam trap in carrying away the condensed steam to allow unrestricted flow of live steam into the head chamber
5. Head pressure

An article with a rough, dry appearance usually requires more than normal pressing time. Be certain, of course, that the article is damp enough when you start to press it. If the article lacks sufficient moisture for good pressing, spray it with the spray gun. For normal pressing, keep the head down for about 15 seconds. Experience in pressing enables you to tell when to add dampness to a garment before you press it, and how long it will take to press that particular type of material.

SAFETY FEATURES

The laundry press head will not close unless you use both hands to push the two red buttons. This prevents getting your hand caught under the press head. Opening the press head requires pushing only one of the green buttons. This is done to allow easy release in an emergency. Also, press heads will not close and lock if an object too thick is between the press head and pad. This safety feature can be tested by taking a bed sheet, rolling it up in a tubular fashion, placing it under the press head, and then trying to close the press head. If the press head is adjusted properly, the head of the press will not lock shut.

Many incidents have occurred where laundry personnel have caught their hands between the press head and the pad. If you follow a few simple safety precautions, this should never happen.

- Never operate the press if any control buttons are sticking.
- Never plug one of the buttons with any device to increase speed.
- Do not allow anyone to stand near the press while operating it.
- Only one operator should be working at a press station at a time.
- Know the location of the main steam valve to the laundry in case of an emergency such as a broken steam line or steam leak.

MAINTENANCE OF PRESSES

The laundry supervisor and operators should not only perform minor maintenance on presses, but also should see that repairs to presses are recorded properly in the equipment maintenance log.

The steam pressure to the presses should be 100 pounds per square inch. Some of the presses have pressure gauges. The air pressure on air-operated presses should be 75 to 95 pounds per square inch. In addition, engineering personnel should give the presses a hydrostatic test once a year. This test should be for 150 pounds per square inch for 1 minute.

Laundry personnel should not get into the mechanics of the laundry press; however, they should perform the following operator maintenance:

1. Thoroughly clean presses (daily).
2. Clean and wax press heads (as required).
3. Change pads and covers (as required).

Early in the morning and just before pressing, you should use a foxtail to dust off the entire press table of the laundry press. Then take some hot, soapy water and completely wash off the press table and dry it. Always be careful not to bring your arms into contact with any of the heated surfaces of the press.

CLEANING PRESS HEADS

Press heads must be clean at all times to prevent clothing from picking up stains that may be on the press head. To clean the press properly, you need press head cleaner, press head wax, and press head mitts. These products are available for procurement through the *Ship's Store Contract Bulletin.*

The main purpose of the press head mitt is to prevent laundry personnel from being burned. The press head mitt has two different sides, one side is smooth, while the other side is made of steel wool material. You use the smooth side to apply press head cleaner to the press head evenly. Then scrub the whole press head with the steel wool side of the press mitt.

Use clean rags to wipe the press clean and always keep the press head mitt on to prevent bums to your hand. CAUTION: NEVER use rags that may have flammable substances on them. After you remove all excess press head cleaner, do the final touch by applying wax to the press head. Use a wax cloth to sprinkle wax on one side of the cloth and then fold it together. Use the press head mitt and wipe the cloth evenly against the press head until all surfaces have been waxed. Use a clean rag to wipe off any excess wax. Use an old bed linen to test the press head for excess cleaner or wax by lowering the press head on the sheet. If no stains are noticed you are ready for regular pressing.

CHANGING PADS

Presses must be properly padded at all times. Packed down pads produce poor quality work and break buttons, and clothing articles pick up burn odors when pressed on burned-out padding. Change these pads as required.

Figure 5-36 illustrates the materials you will need to change pads which includes the following:

- One steel wool pad
- Two flannel pads
- One press cover

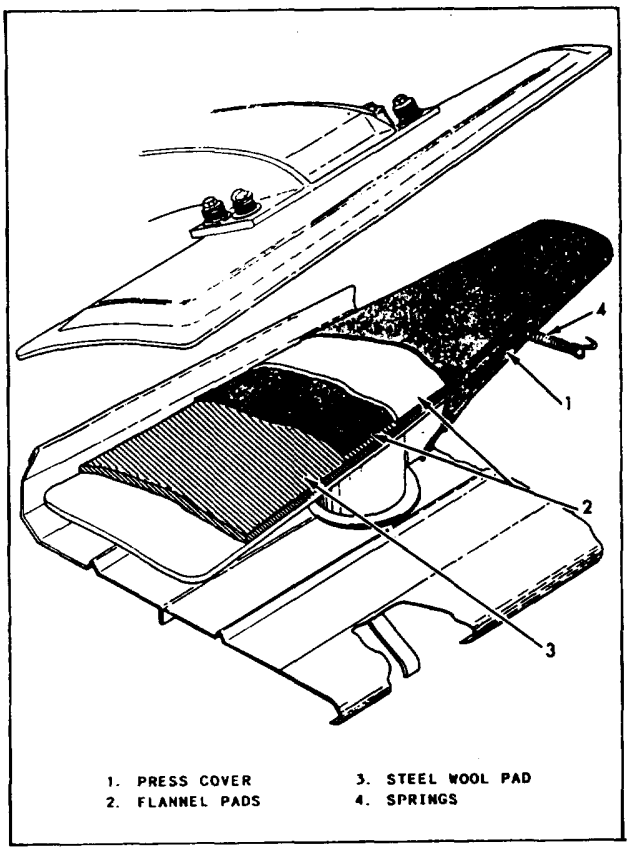

Figure 5-36.—Changing laundry press padding.

The procedure for padding the buck is simple. Unclamp or unhook the cover beneath the buck and remove all the old padding.

The steel wool pad on the bottom is very expensive and needs to be changed only when worn or rusted (about once a year). On the top of your steel wool pad, place the two flannel pads and then the press cover on top of them. Then pull the drawstring tight and tie it off. Connect all tension springs and clamps under the buck of the press and you are done.

Synthetic covers last longer than cotton covers. The drawstring in the cover helps to hold the padding in place, but the tension springs on the clamps or hooks beneath the buck hold the padding firmly in place. They give an even pull all around the cover. Change covers when they become soiled or badly scorched.

Always use two layers of flannel on the press. One flannel pad does not cushion the garment well enough and buttons may be broken. When two

layers of flannel are used, change one layer each week. Place the new layer on the bottom and the used layer on top. You can wash double-faced flannel and reuse it. If the flannel shrinks, use it on a smaller buck. If the flannel becomes hard, apply steam to the surface and work it with the hand until the flannel becomes pliable. Tumbling also makes the flannel pliable.

Change the knitted padding when it becomes scorched or burned. No set time can be given for changing the knitted padding, but under normal operating conditions it should be changed about once a month.

PRESS LAYS

In machine pressing, each garment is finished by a series of LAYS. Each lay is a position of the garment on the buck, and the series should cover the entire garment. Out-of-the-way places that cannot be pressed with the machine should be smoothed out with a hand iron.

Sequences of lays for shirts and trousers are described on the following pages. The ones given are considered the minimum for each article when good quality pressing is desired. The lays, however, are not standard with all pressers. For example, some laundry personnel use two lays for pressing the front of shirts, one with the pocket flap up and the other with the flap down. Other pressers use one lay with the flap down and get accept able work.

When determining the proper sequence of lays for a garment, take into consideration the following:

1. Minimum number of lays required to do the work satisfactorily
2. Logical sequence of lays, for easier and quick handling
3. Part of the garment to be pressed last to prevent damage to the finish of the most conspicuous parts of the garment

The lays given for different articles below are now used in ships' laundries. The following lays for shirts and trousers do not include the use of a hand iron for touch-up work on places difficult to reach with the press. When available, use these irons as necessary to get good quality work. A garment that is nearly finished should not be handled too much in doing touch-up.

PRESS LAYS FOR SHIRTS

Figures 5-37 through 5-39 give the sequence of lays for pressing a shirt on presses available in shipboard laundries. The press lays shown are considered the minimum required in pressing a shirt properly. The first lay shows the pressing of a shirt collar on a standard press; it may be done on a collar/cuff press if available.

Laundries with a sleeve press may use it to press sleeves in place of a conventional press. The pressing of the inside of the pocket should be done as shown in figures 5-37 through 5-39; however, on synthetic uniforms it is not necessary and pockets will normally not fold back. Synthetic and synthetic blend uniforms should be finished in the dryer when possible as outlined in the drying section. Spray guns should be used when necessary to keep shirts damp during pressing. This also improves the finished appearance of the shirt, Any wrinkles that cannot be removed using the conventional press should be done by a hand iron.

PRESS LAYS FOR TROUSERS

Figures 5-40 and 5-41 illustrate the press lays that are used for a pair of trousers.

Remove the trousers from the damp box. (Keep a wet net over the damp box at all times.) Straighten out the trouser pockets as shown in the first two lays of figure 5-40. Shape the trousers with your hand and dampen, if necessary. Then continue with the lays as shown.

If the steam pressure in the laundry is below 100 pounds of pressure, you may have to press the trousers a bit longer to make sure all dampness is gone, especially for the inside pockets. When matching the inseams be sure the outer seam matches the inner seam on both legs. If they are not matched properly, the line will run uneven on the trousers. When you complete the press lays, hang the trousers on a hanger equipped with a trouser guard to prevent lines from setting in the legs of the trousers during stowage.

FINISHING OTHER ARTICLES

To finish cap covers you should use a regular iron and press the band on the small end of a press.

Press garrison caps in two lays on any type of press. Use one lay for each side. Do NOT press caps with leather bands on a laundry press, The leather will not withstand the temperature of the hot head.

When you press ties, cut a cardboard form that will fit inside to hold them straight. Then press with two lays, one for each side. Do not press wool worsted ties on a laundry press. Use

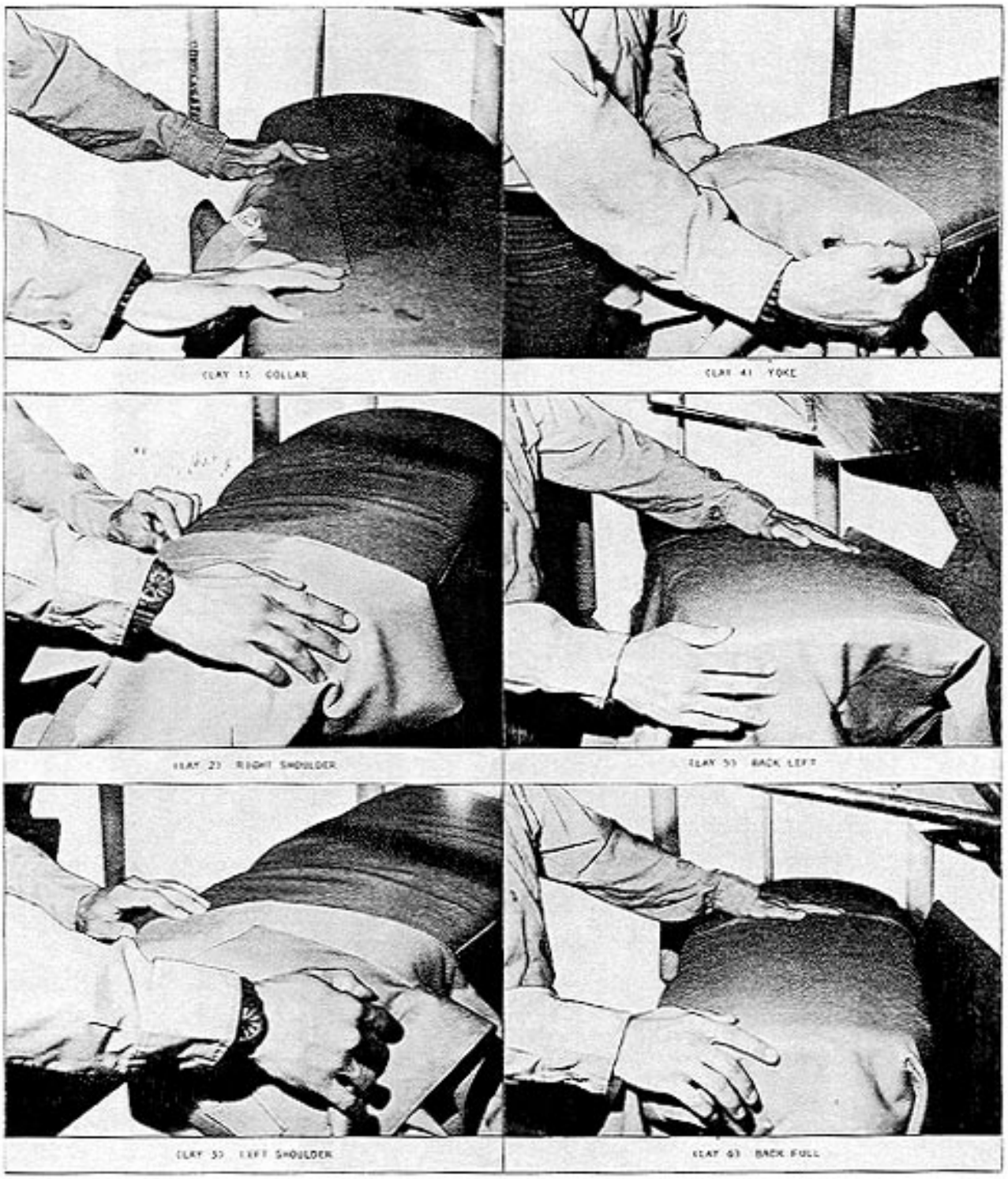

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Figure 5-37.-Lays for pressing shirts (lays 1 through 6).

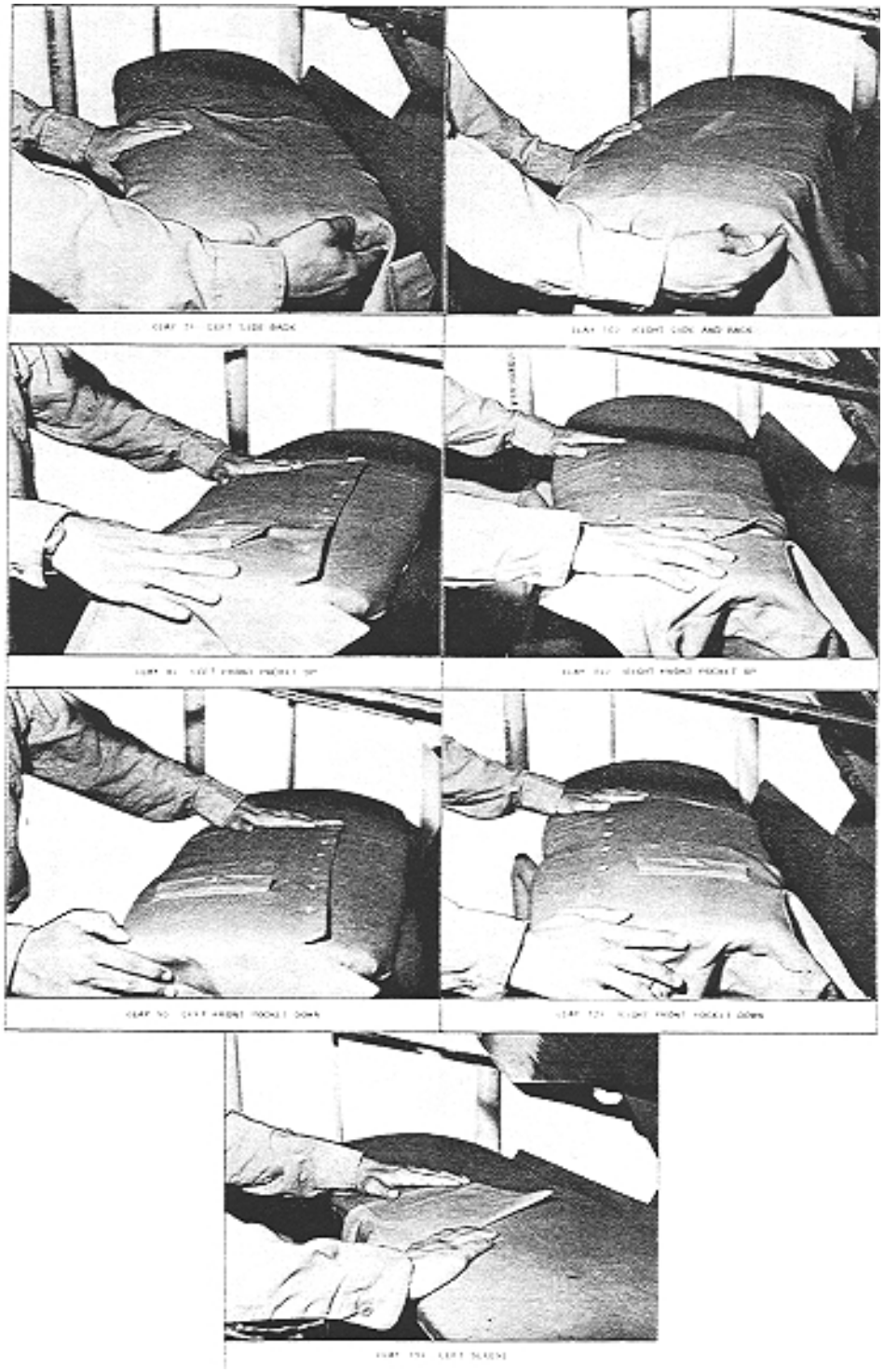

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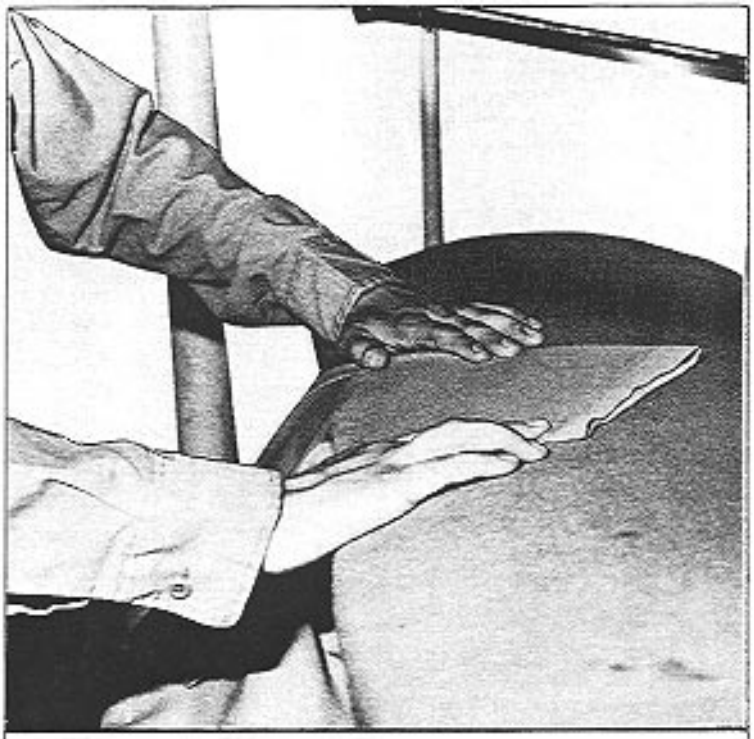
Figure 5-38.-Lays for shirts (lays 7 through 13).



(LAY 14) RIGHT SLEEVE

(LAY 15) FINISHED PRODUCT

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Figure 5-39.-Lays for shirts (lays 14 through 15).

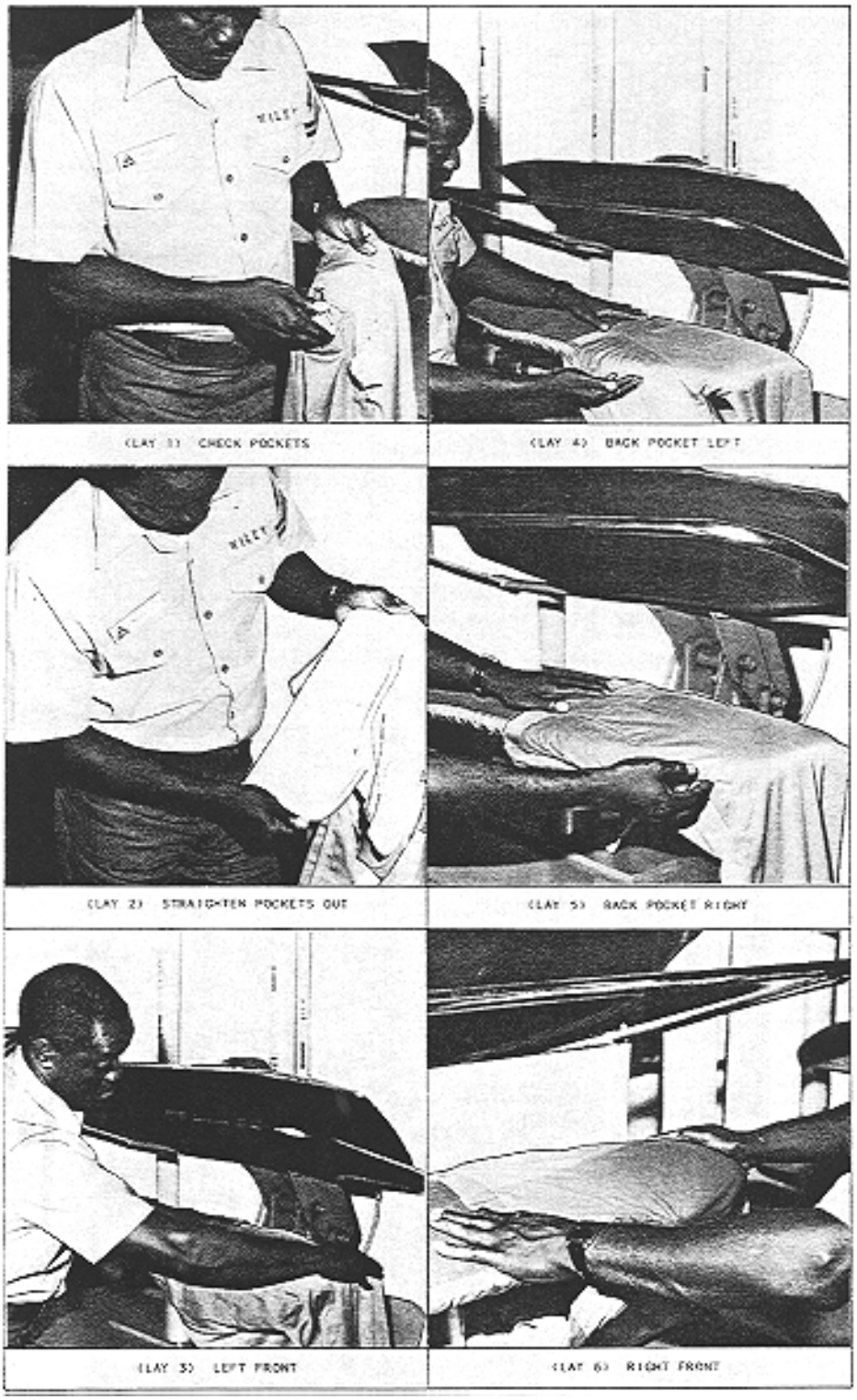

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Figure 5-40.-Press lays for trousers (lays 1 through 6).

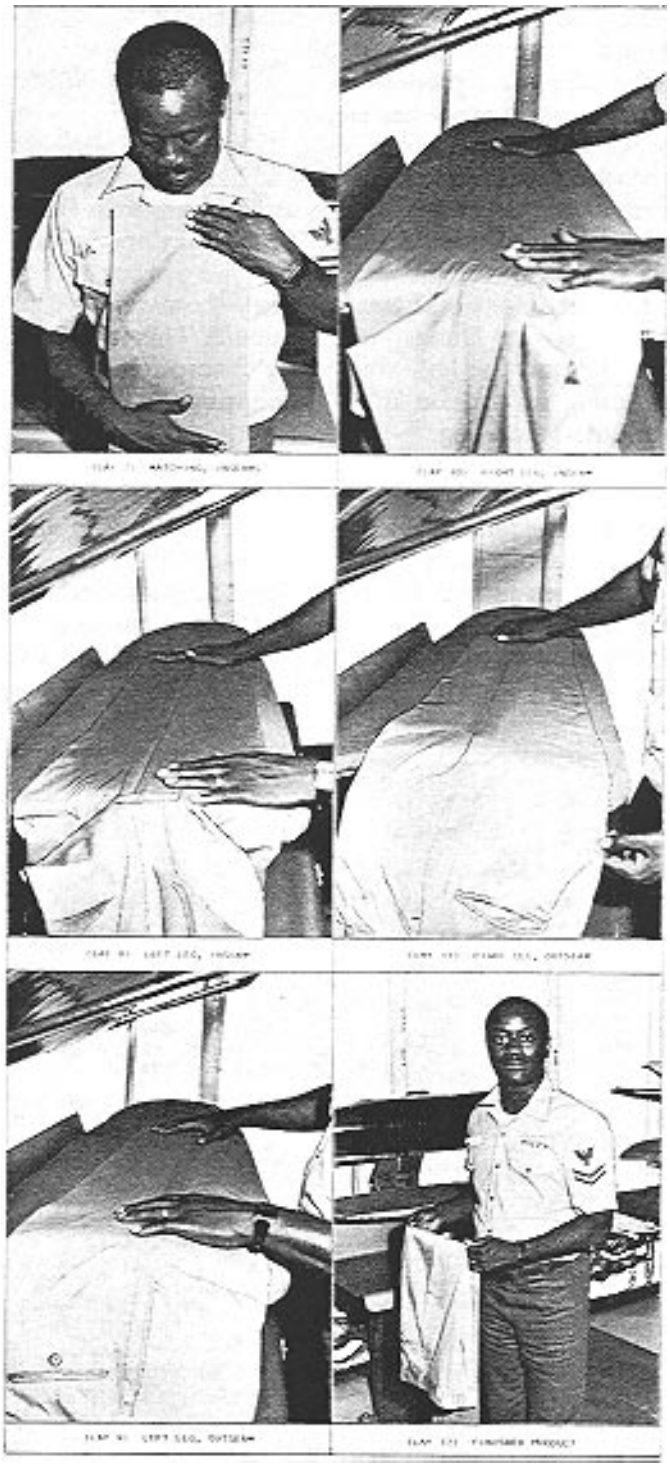

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Figure 5-41.-Lays for trousers (lays 7 through 12).

a press in the dry-cleaning plant, with a covered head.

Pressing dungaree shirts is done in the same manner as shown in shirt pressing; however, care should be taken when pressing the sleeve with the petty officer crow. This petty officer crow may cause a stain on the press head or press cover. To avoid this problem, you should place a piece of cardboard between the crow and the press head or cover. This prevents the petty officer crow from imprinting on the press head or press cover.

Precondition dungarees in the dryer before pressing as discussed in the drying section. This is done because they hold a lot of water and on newer dungarees the blue color may fade onto the press cover, thus ruining the cover. Dungaree trousers are pressed inside out and the legs are pressed flat with creases going inward on the seams instead of in the middle of the leg.

Care should be taken when pressing tablecloths or napkins. When a flatwork ironer is not available, these items will have to be pressed on a conventional press. The tablecloths and napkins should be preconditioned in the dryer before pressing (do not overdry). If the tablecloths and napkins are not preconditioned before pressing, they may scorch. On the other hand, if they are pressed too dry, they will not be finished properly. Tablecloths should be stored with a wet cloth over them until you are ready to press them or they will dry out.

ASSEMBLY AND ISSUE

In this section we are concerned with assembly and handling of articles both in individual bundles and in bulk lots. Bulk lots that are tumbled can be loaded directly into the laundry bags in which they were brought to the laundry. Such is not the case, however, with items in an individual's bundle. This is a matter of (1) careful handling, (2) thorough inspections, and (3) accurate counting.

ASSEMBLY OF INDIVIDUAL LOTS

Before the individual lots are received in the assembly area, the individual's ticket (NAVSUP Form 233) should be placed in the assembly bins in alphabetical order. Then you will place finished articles as marked in the proper bin. Figure 5-42

43.89

Figure 5-42.-Assembly room.

shows laundry personnel doing this procedure in the assembly room. After all the articles in an individual bundle have been binned, it is best to remove the articles from the net bag. Fold and return them to the net bag as you check off the items on the laundry list.

Pin the net bag with a large laundry pin and attach the separate sock bag to this net bag using a small laundry pin. MAKE SURE you attach the correct laundry sock bag to the correct net bag. To make issuing individual bundles easier, always make sure that the name or laundry mark of the person owning the articles is shown clearly on the net after you wrap and pin the bundle.

Once you have done this, check the laundry list and make sure you have all the finished press work (shirts, trousers, and so forth). Cover the press work with a suit wrapper and attach the laundry list to the wrapper using glue or tape.

ASSEMBLY OF BULK LOTS

Bulk lots are normally tumble dryed and placed back in the divisional laundry bags. Items that you receive in bulk, such as tablecloths, should be returned in bulk bags in even stacks tied together with a string after pressing. Flatwork lots including sheets, towels, and so forth, should be folded and tied in bundles and returned in laundry bags. When tying these articles in bundles, always keep similar items together. The following system should be used when handling bulk lots.

1. The division petty officer delivers bulk laundry to the laundry receiving room.
2. The laundry bag is weighed and the weight is noted in the bulk lot laundry log. The Received By and Delivered By columns of the bulkwork log are signed by the laundry petty officer and the division petty officer to acknowledge the delivery weight.
3. After the work is completed and when the laundry is picked up, the bag is again weighed with the post-processing weight noted in the log. Both petty officers sign the log on issuance of the finished work.

Refer to the log when a division brings its laundry back to the laundry issue room claiming unacceptable losses of clothing. Receipt and issue of bulk laundry can be compared. A 1-pound loss in weight, for instance on a 50-pound bag of laundry, would indicate that the loss problem may be occurring in the living compartment rather than the laundry.

HANDLING FINISHED LAUNDRY

Handle finished laundry with care. Collect it promptly and place it in the proper bin. Do not allow unfolded clothes from the net bags to pile up around the laundry on the worktables or shelves. Be careful not to allow clothing to fall to the deck. When finished work is soiled or wrinkled by rough or careless handling, reworking is the usual result.

No articles should be returned to the owner unless it represents the best quality of work and care your laundry can give it. Streaks, stains, broken buttons, or any blemishes on finished work are usually inexcusable and should be corrected before the article is returned to its owner.

QUALITY ASSURANCE

As you know, every individual expects the return of all articles from the laundry done in a professional manner. When you receive finished work in the assembly room, check each piece for cleanliness, stains, scratches, marks, or any other type of blemish. The pressing and finishing section gives the standards of quality for finished work. These are the things you must look for when inspecting laundry. A shirt, for example, should have a QUALITY LOOK; that is, it should be thoroughly clean, free of blemishes, smoothly ironed, and have the proper creases. What applies to the inspection of shirts, of course, applies to every article. Remember that you have the ultimate responsibility of approving laundry before it is returned to its owner.

ISSUING LAUNDRY

Issue finished laundry according to the schedule. Provide space for laundry that is ready for issue. You need shelves or tables for wrapped bundles and space for laundry bags. In case you have a special room for receiving and issuing, put finished bundles neatly on shelves in alphabetical order.

Hang shirts, trousers, and coats on hangers and cover them with suit wrappers.

Issue laundry to authorized persons only, those designated on the schedule, or to individual owners. Make sure that proper signatures are obtained and that the count reflected is accurate. This is necessary to establish validity in laundry claims. Any problems encountered in issuing laundry to officers, chiefs, Mess Management

Specialists, or other personnel should be reported to your immediate supervisor.

HANDLING SENDBACKS

Sendbacks are articles in individual bundles and bulk lots that must be sent back for reprocessing. Place an article sent back for reprocessing in a net so that it can be reworked immediately. Because sendbacks hold up delivery of laundry, they should receive special attention so that you can make delivery on schedule. Recheck on them occasionally to make certain the desired work is being done.

CLAIMS FOR DAMAGED OR LOST CLOTHING

Claims by crew members arising from loss of or damage to personal clothing in the ship's laundry should be handled as shown in the NAVSUP P-487.

The goal for laundry claims during any given accounting period is zero; however, very seldom is this goal obtained. Mistakes are made and claims are submitted usually because of the following:

- Errors made during marking or assembly
- Delivery to the wrong division or officer/CPO
- Weak security controls in the laundry
- Clothing damaged during processing

Loss or damage to clothing can only be corrected through the use of proper laundering procedures. The primary factor attributed to loss of clothing in the laundry is poor lot control. If the laundry has good lot control it will avoid delays, confusion, and loss of clothing articles. To minimize laundry claims due to lost or damaged clothing, laundry processing as discussed in this chapter should be followed.

SECURING FITTINGS AND EQUIPMENT

Yoke is one of the damage control material conditions that is set each day aboard ship just after working hours.

Once the laundry is secured for the day, the Ship's Serviceman working as damage control petty officer should make sure the material condition of yoke is set properly in the laundry. Normally these yoke fittings are logged closed in damage control central at this time. If the laundry is going to operate past normal working hours, any yoke fittings that are required to be opened should be logged opened in damage control central.

Every day electricity to equipment is secured by turning off the switch on each piece of equipment that controls the power. The electricity to any equipment should be secured when that piece of equipment is not in use.

Steam to laundry presses should be secured daily by closing the valve to the steam line connected to the press. Care should be taken to prevent burning yourself. The steam valve to the laundry presses should be reopened the next workday. Never leave loads of laundry in the equipment or hang clothes near steam lines or presses. All laundry cleaned for that day should be picked up by the responsible division/ department before securing for the day.